Information System Requirements for the Electrical, Electronic, and Electromechanical (EEE) Parts Information Management System (EPIMS)

From NASA-DID-P200 (Requirements DID)
of NASA-STD-2100-91

Approval Signatures

_____ _____

Stephen C. Waterbury
EPIMS Technical Representative
NASA Parts Project Office
Code 310.A
Goddard Space Flight Center

Date

_____ _____

Jack J. Shaw
Manager, NASA Parts Project Office
Code 310.A
Goddard Space Flight Center

Date

_____ _____

Daniel Barney
Manager, NASA EEE Parts Program
Code QW
NASA Headquarters

Date

_____ _____

Linda Methia
Manager, Assurance Information Technology
Code QV
NASA Headquarters

Date

Table of Contents

11 Introduction 17
1.1 Identification 17
1.2 Scope 18
1.3 Purpose and Objectives 18
1.4 Document Status and Schedule 18
1.5 Document Revision Policy 19
1.6 Document Organization 19
1.6.1 Major Sections of This Document 19
1.6.2 EPIMS Life Cycle Documentation Set 21
1.7 Requirements Approach and Trade-offs 22
1.7.1 Requirements Approach 22
1.7.1.1 Definition and Coordination of Requirements 22
1.7.1.2 Configuration Control of System Requirements 22
1.7.1.3 Identification and Traceability of Requirements to Design 22
1.7.2 Requirements Trade-offs 22
22 Related Documentation 25
2.1 EPIMS Documents 25
2.2 NASA Documents 25
2.3 Other Reference Documents 26
33 System Concept Overview 27
3.1 Introduction 27
3.2 Definition of the Software 27
3.2.1 Purpose and Scope 27
3.2.2 Goals and Objectives 28
3.2.3 Description 28
3.2.4 Policies and Standards 28
3.2.4.1 EEE Parts Domain Standards and Policies 28
3.2.4.2 System, Software, and Metadata Standards 28
3.3 User Community Definition 30
3.3.1 Primary Users 30
3.3.2 Secondary Users 30
3.4 Capabilities and Characteristics 30
3.4.1 Architecture 30

3.4.1.1 Multi-Tiered Client-Server Architecture 30
3.4.1.2 Client-Server Roles 31
3.4.1.3 The EPIMS Application 31
3.4.2 EPIMS Baseline Functionality 33
3.4.2.1 EPIMS Baseline Functional Decomposition 33
3.4.2.2 Synopsis of EPIMS Baseline Functional Areas 34
4 External Interface Requirements 37
4.1 User Interface Requirements 37
4.1.1 System Level User Interface Requirements 37
4.1.2 Application Level Interface Requirements 37
4.1.3 Function Level User Interface Requirements 38
4.2 External System Interfaces 38
4.2.1 NASA Systems 38
4.2.2 NASA Contractor Systems 38
4.2.3 Non-NASA Government Systems 39
4.2.3.1 Government-Industry Data Exchange Program (GIDEP) 39
5 Requirements Specification 41
5.1 Functional Requirements 41
5.1.1 Functional Subject Areas 41
5.2.2 Baseline EPIMS Functional Requirements 43
5.1.2.1 Help 43
On-Line Help System 43
Window-Specific Help Topics 43
Access to All Help Topics 43
Context Sensitivity 43
Presentation of a Help Topic 43
String Search 43
Save-to-FIle Capability 43
Print Capability 44
5.1.2.2 Federal Supply Class (FSC) Directory 44
FSC Database 44
Query Capability 44
Query Results Presentation 44
Report Capability 44
FSC Look-up Capability 44
FSC Look-up Query 44
FSC Look-up Query Results Presentation 45
FSC Look-up Insertion 45
5.1.2.3 Commercial And Government Entity (CAGE) Directory 45
CAGE Database 45
Support for State as Separate Data Element 45
Query Capability 45
Display of Query Result List 46
Display of Detailed CAGE Information 46
Report Capability 46
Add Capability (Administrator only) 46
Modify Capability (Administrator only) 46
Delete Capability (Administrator only) 46
CAGE Look-up Capability 46
CAGE Look-up Query 47
CAGE Look-up Query Results Presentation 47
CAGE Look-up Detailed Information 47
CAGE Look-up Insertion 47
5.1.2.4 User Directory and Data Access Control 47
User Directory Repository 47

Query Capability 47
Commercial And Government Entity (CAGE) Look-up 48
Project Directory Look-up 48
Display of Query Result List 48
Display of Detailed User Directory Information 48
Add Capability (Administrator only) 48
Modify Capability (Administrator only) 48
Delete Capability (Administrator only) 49
User Types 49
Data Access Roles 49
5.1.2.5 NASA Project Directory 53
Project Directory Repository 53
Query Capability 53
Query Results Presentation 53
Add Capability (Global Data Administrator only) 53
Modify Capability (Global Data Administrator only) 53
Delete Capability (Global Data Administrator only) 53
Project Look-up Capability 54
Project Look-up Query Capability 54
Project Look-up Query Results Presentation 54
Project Look-up Insertion 54
5.1.2.6 NASA Spacecraft and Design Elements Directory 54
NASA Spacecraft and Design Elements Directory Repository ... 54
Data Access Control 54
Query Capability 55
Query Results Presentation 55
Add Capability (Project Data Administrator only) 55
Modify Capability (Project Data Administrator only) 55
Delete Capability (Project Data Administrator only) 55
NASA Spacecraft and Design Elements Directory Look-up Capability 56
Look-up Query Capability 56
Look-up Query Results Presentation 56
Look-up Insertion 56
5.1.2.7 Alerts/Advisories/Problem Reports 56
GIDEP FEDI Repository 56
Repository Data Elements 57
Add Capability (Global Data Administrator only) 57
Modify Capability (Global Data Administrator only) 57
Delete Capability (Global Data Administrator only) 57
NASA Advisories Repository 57
Add Capability (Global Data Administrator only) 57
Modify Capability (Global Data Administrator only) 57
Delete Capability (Global Data Administrator only) 58
Query Capability 58
FSC Look-up for Query 58
CAGE Look-up for Query 58
Alert/Advisory Query Results Presentation 58
Display of Detailed Alert/Advisory Information 58
Alert/Advisory Report Capability 58
5.1.2.8 Parts Lists 58
An Important Note on Parts List “Versions” in EPIMS 59
Parts List Repository 59
Parts List Data Access Control 60
Parts List Selection 60
Part and Parts List Selection by Parts List Type 60
Part and Parts List Selection by Project 60
NASA Systems and Design Entities Look-up 60

Part Selection 60
Query Results Presentation 60
Display of Detailed Part Information 61
Display of Detailed Part Manufacturer Information 61
Display of Design Element and System Information 61
Parts List Information Input — General 61
Parts List Required Information Input 61
Pick List of Relevant Projects 61
Pick List of Relevant Spacecraft 62
New Spacecraft Input 62
Pick List of Parts List Types 62
Pick List of Parts List Versions to Use in the Creation of a Working Copy 62
Parts List Working Copy Creation 62
Parts List Version Creation 62
Part Information Input 63
Spacecraft Element Information Input 63
New System or Design Entity Input 63
Part Quantity 63
Parts List Line Item Modify 63
Parts List Line Item Delete 63
Parts List Release 64
Parts List Report Capability 64
5.1.2.9 Non-Standard Part Approval Requests (NSPAR) 64
NSPAR Repository 64
NSPAR Data Access Control 64
NSPAR Selection 64
NSPAR Selection by Project 65
NSPAR Selection by Version 65
Query Results Presentation 65
Display of Detailed NSPAR Information 65
Display of NSPAR Part Manufacturer Information 65
NSPAR Add or Modify — General 66
NSPAR Required Information Input 66
NSPAR Optional Information Input 66
Pick List of Relevant Projects 66
Pick List of NSPAR Types 66
NSPAR FSC Look-up 66
NSPAR Add 67
NSPAR Creation by Copying an Existing NSPAR 67
NSPAR Modify 67
NSPAR Delete 67
NSPAR Release 67
NASA NSPAR Number/Version Uniqueness 68
NSPAR Resubmit (Copy, Modify, and Release) 68
NSPAR Report Capability 68
5.1.2.10 NASA Standard Parts List (NSPL, or MIL-STD-975) 68
NSPL Repository 68
NSPL Data Access 68
NSPL Version Selection 68
Query Capability 69
FSC Look-up for Query 69
Query Results Presentation 69
Display of Detailed Part Information 69
NSPL Report Capability 69
5.1.2.11 Alert Impact Cross-Reference 69
Alert Impact Cross-Reference Repository 70
Alert/Part Match Definition 70
Alert/Part Match Prioritization 73

Automatic Maintenance of Cross-Reference Integrity: Parts List or NSPAR Additions, Modifications, and Deletions 74
Automatic Maintenance of Cross-Reference Integrity: Alert, Advisory, and Problem Report Additions, Modifications, and Deletions 74
Automatic Notification of Hits 75
Query Capability and Data Access Control 75
Project Look-up for Query 75
FSC Look-up for Query 75
Spacecraft and Design Elements Look-up for Query 75
Query Results Presentation 76
Alert Detailed Information Display 76
Parts List Detailed Information Display 76
Disposition of Alert Impacts 76
"Release" of Alert Impact Dispositions 76
Alert Impact Cross-Reference Report Capability 77
5.1.2.12 Parts Lists Comparison 77
Selection of Parts Lists to Be Compared 77
Parts List Comparison Logic: Two Project Parts Lists or Project-Approved Parts Lists 77
Parts List Comparison Logic: A Project Parts List or a Project-Approved Parts List vs. the NSPL 78
Parts List Comparison Results Display — Matched Parts 79
Parts List Comparison Results Display — Unmatched Parts 80
Parts List Comparison Results Display — Detailed Information 80
Parts List Comparison Results Report 80
Parts List Comparison — Recomparing on Other FSC's 80
5.1.2.13 Technical Documents and News 80
Technical News and Technical Document Archives 80
Presentation of a Technical Article 80
String Search 80
Recursive String Search 81
Selection and Retrieval of Technical Articles 81
Save-to-FIle Capability 81
Print Capability 81
5.1.3 Candidate EPIMS Functional Requirements 82
5.1.3.1 Help 82
5.1.3.2 FSC Directory 82
5.1.3.3 CAGE Directory 82
5.1.3.4 User Directory 82
5.1.3.5 NASA Project Directory 84
5.1.3.6 NASA Spacecraft and Design Elements Directory 84
5.1.3.7 Alerts/Advisories/Problem Reports 84
User Selection of Alert/Advisory/Problem Report Types to be Cross-Referenced to Project Data 84
Create and Maintain Problem Report Data 85
Release Problem Report Data 85
Registration of EPIMS Users of GIDEP Data 85
Specific Access Restrictions on GIDEP Data 85
Notification to Users of GIDEP Data Sensitivity 85
5.1.3.8 Parts Lists 86
Capture of Parts Lists from CAD/CAM Applications 86
Bill-of-Materials generation from project parts list 86
5.1.3.9 Non-Standard Part Approval Requests (NSPAR) 87
5.1.3.10 NASA Standard Parts List (NSPL, or MIL-STD-975) 87
Nomination System for MIL-STD-975 Candidate Parts 87
Notes for MIL-STD-975 88
5.1.3.11 Alert Impact Cross-Reference 89

Alert Impact Cross-Reference Reports 89
5.1.3.12 Parts List Comparison 89
5.1.3.13 Technical Documents and News 89
Technical News and Technical Document Archives 89
Enhanced Technical Document Archive 89
Textual Data Repository 89
Textual Data Repository: Archiving 90
5.1.3.14 Part List Review 90
Project Parts List Review Repository 90
Project Parts List Review Data Access Control 91
Project Parts List Review Query Capability 91
Project Parts List Review UPN Look-up 91
Project Parts List Review Query Capability Spacecraft and Design Elements Look-up 91
Project Parts List Review Query Results Display 91
Project Parts List Review Detail Display 91
Project Parts List Review Access to NSPAR Data 92
Project Parts List Review Access to Alert Impact Cross-Reference Data 92
Project Parts List Review Access to Parts List Compare Functions 92
Project Parts List Review Access to Test and Field Reliability Data 92
Project Parts List Review Notes Data Support 92
Project Parts List Review Notes Display 92
Project Parts List Review Report Capability 92
5.1.3.15 Qualified Manufacturers Lists/Qualified Products Lists (QML/QPL) and Manufacturer Surveys93
5.1.3.16 User Comments and Change Requests 94
5.1.3.17 Parts Test and Analysis Data 94
Parts Test and Analysis Data Repository 94
Screening Test Data 95
Receiving Test and Inspection Data 95
Test Requirements Information 95
5.1.3.18 Parts Radiation Test Data 95
Access to JPL's RADATA System 95
5.1.3.19 Parts Library 96
Part Selection 96
Part Specifications and Drawings 96
Access to Vendor Data (Electronic Data Books) 96
Access to Libraries Via the Internet 96
5.1.3.20 Data Capture, Upload, and Download 96
Data Upload Validation 96
Data Upload and Download Interactive Mode 97
Ordering of Data Elements (Fields) 97
Upload/Download ASCII Text Files 97
Upload/Download Image Data 97
Upload/Download Data from Computer-Aided (CA*) Applications 97
Space Station Freedom Data Exchange Function 97
MAPTIS Data Import Function 97
5.1.3.21 Parts Procurement, Tracking, and Inventory 98
Parts Procurement, Tracking, and Inventory 98
5.1.3.22 Parts Application Information 98
Part Derating Calculation System 98
MIL-HDBK-978 98
5.1.3.23 Parts Reliability Data 98
Reliability Data Repository 98
5.1.3.24 User Technical Interchange Forum 99

User Technical Interchange Forum - Concept 99
5.2 Performance and Quality Engineering Candidate Requirements 100
5.2.1 Performance Requirements 100
5.2.2 Quality Engineering Requirements 100
5.2.2.1 Data Quality and Integrity 100
Data Back-ups 100
Data Archiving 100
5.3 Safety Requirements 100
5.4 Security and Privacy Requirements 101
5.4.1 Application Level Security and Privacy Requirements 101
5.4.2 System Level Security Requirements 101
5.5 Implementation Constraints 101
5.6 Site Adaptation 101
5.7 Design Goals 101
66 Traceability to Parent Requirements 103
6.1 NHB 5300.4(1F) Requirements 103
6.1.1 General NHB Requirements and Information 103
information management 104
use of information specifications 104
minimum information requirements 105
data submittal in electronic format 105
maximize use of standard parts 105
minimize different types and styles of parts 105
6.1.2 Specific NHB Requirements 107
6.2 EPIMS System Specification (ESS) Requirements 107
77 Partitioning for Phased Delivery 115
7.1 Rationale for Phasing 115
7.2 Recursively Phased Life Cycle Plan 115
7.3 Development Priorities 116
7.4 Detailed Phase Definition Matrices 119
7.4.1 EPIMS Phase 1 Baseline Definition Matrix 119
88 Notes 159
8.1 Parts List Versions in EPIMS 159
8.2 EPIMS Integration with the NASA Design Environment 159

List of Figures

Figure 1: Position of This Document in the EPIMS Life Cycle Documentation Set 21

Figure 2. EPIMS Interface and Data Flow Overview — Level 0 29

Figure 2. Multi-Tiered Client-Server Architecture 31

Figure 3. EPIMS Distributed System Client-Server Roles 32

Figure 4. EPIMS Baseline Top Level Functional Decomposition: Functional Modules 33

Figure 5: Formal Specification of Alert Impact Cross-Reference Match Condition 72

Figure 6: Project Parts List and Project-Approved Parts List Comparison Match Condition 78

Figure 7: NASA Standard Parts List Comparison Match Condition 79

Figure 8: EPIMS Recursively Phased Life Cycle 116

List of Tables

User Types **50**
Data Access Roles **51**
Alert/Part Match Prioritization **73**
User Types (Candidate Requirements) **83**
User Priorities for EPIMS Functional and User Support Areas **117**
EPIMS Phase 1 Baseline Definition Matrix **120**

1

Introduction

1.1 Identification

This document is the Information System Concept and Requirements for the Electrical, Electronic, and Electromechanical (EEE) Parts Information Management System (EPIMS).

The Universe of Discourse of EEE parts information has extensive commonalities with the greater engineering design and manufacturing domain. For this reason, applicable engineering information standards for data elements and information models are being incorporated into these requirements as much as possible, to further the strategies of information sharing, data integrity, concurrent engineering, and integrated product life cycle support.

The NASA Parts Project Office (NPPO) is participating in and coordinating with the principal government, industry, and international standards activities that are addressing the problems of exchange, commerce, tracking, storage, and access of EEE parts data and product data in general. Standards activities in which the NPPO actively participates include:

- ISO Technical Committee 184, Subcommittee 4 (TC184/SC4), "Industrial Data and Global Manufacturing Programming Languages," which is developing ISO 10303, the Standard for Exchange of Product Model Data (colloquially known as "STEP" — see Glossary);
- The IGES/PDES (Initial Graphics Exchange Specification/Product Data Exchange using STEP) Organization, or IPO, which is the ANSI-accredited U.S. standards body contributing to the development of IGES and ISO 10303;
- The International Electrotechnical Commission (IEC) TC 3, Documentation and Graphical Symbols, and TC 93, Design Automation;

- The National Initiative for Product Data Exchange (NIPDE) Electronic Commerce of Component Information (ECCI) program. NIPDE is a U.S. initiative with participation from government agencies, manufacturers, software vendors, and suppliers of information and information systems.

1.2 Scope

The scope of this document is to conceptualize and define both baseline and future upgrades for the development of an information management system designed to assist the NASA management of EEE parts information.

This document is coordinated, published, and maintained by the NASA Parts Project Office for the Office of Safety and Mission Assurance, NASA Headquarters.

1.3 Purpose and Objectives

The purpose of this document is to specify the baseline requirements of the NASA EEE parts information system in order to identify existing capabilities and future upgrades.

The objectives to achieve this purpose include:

- the replacement of the previous set of requirements described in the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification (NASA Parts Project Office, 1988.);
- the addition of requirements that have been identified since the release of the above document;
- the recording of the requirements for the EEE parts information system as identified by EEE parts managers and other NASA officials in the areas of project management, engineering design, testing, quality assurance, and logistics;
- the documentation of a baseline set of requirements; and
- the documentation of the requirement priorities for future phase development.

1.4 Document Status and Schedule

When this document has been coordinated and approved, it will be issued as a baseline version.

The data requirements of the NASA EEE parts assurance and engineering user communities are complex, extensive, and subject to change — therefore, this document will require continuing maintenance to reflect properly the requirements it defines. As a matter of policy, revisions will be issued annually, or more frequently when necessary.

1.5 Document Revision Policy

Any revisions to the baseline requirements specified in this document will be fully coordinated among all NASA centers, as follows:

- A Joint Application Development (JAD) meeting will be conducted in which all NASA centers will be invited to participate. The baseline requirements and priorities defined in this document will be discussed in the agency-wide JAD, and a consensus will be reached on a set of revisions to the baseline requirements and implementation priorities.
- The NPPO will prepare a draft revision of this document based upon the results of the JAD. The draft will be distributed to the centers for comment.
- The NPPO will present a proposed disposition of the center comments to the NASA Parts Steering Committee (NPSC) for final disposition.
- The NPPO will use the final disposition of the NPSC to prepare a final draft of the document, which will be presented to the NPSC for approval.
- Upon approval by the NPSC, the document will be issued as a new version, which will become the new baseline EPIMS requirements.

1.6 Document Organization

1.6.1 Major Sections of This Document

The major sections of this document are:

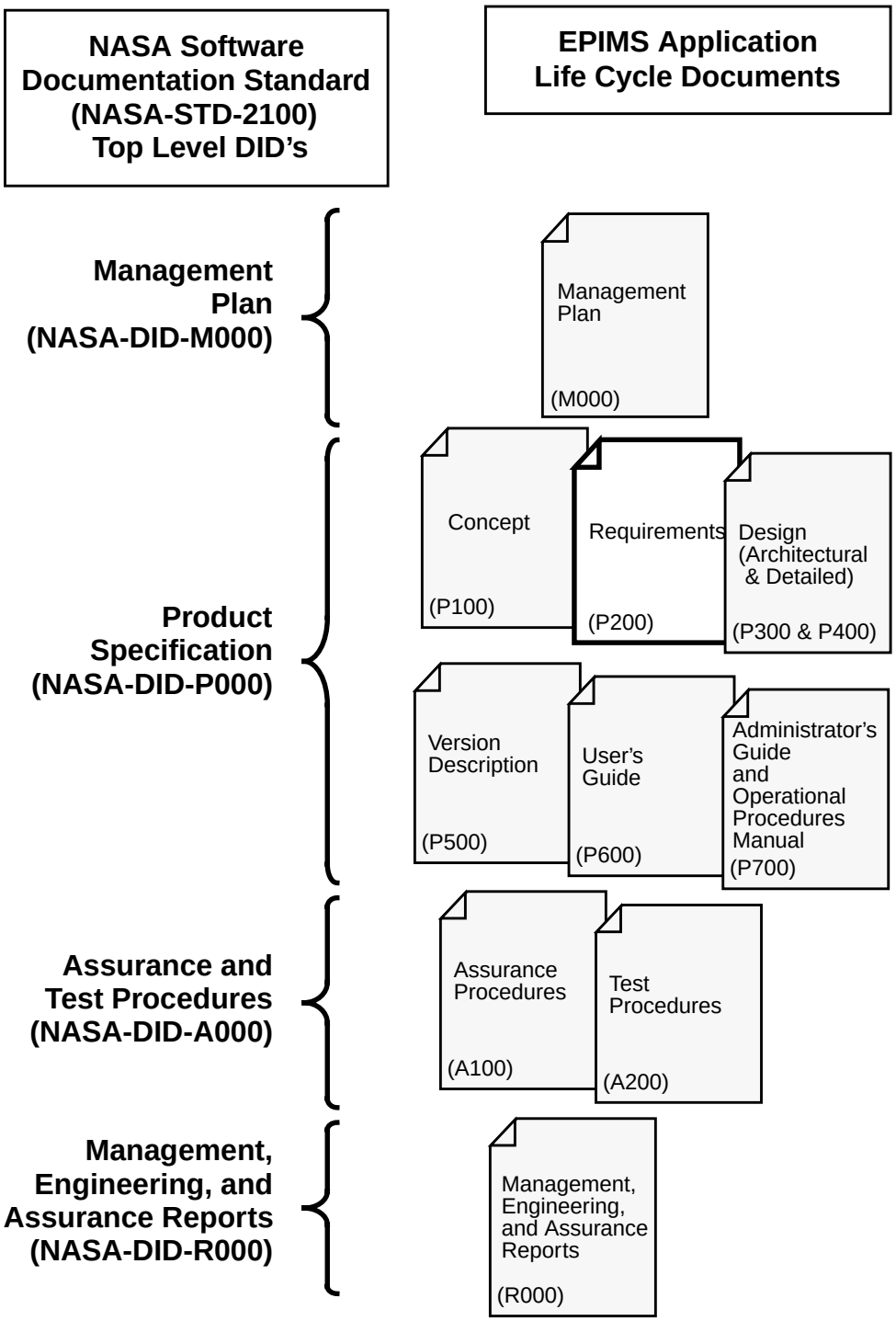
- Section 1, *Introduction*, provides the volume identification, scope, purpose, objectives, status, schedule, revision policy, organization, and requirements approach and trade-offs.
- Section 2, *Related Documentation*, lists all documents that are parents or references for this document, as well as other existing documents in the EPIMS application life cycle documentation set.
- Section 3, *System Concept*, contains relevant portions of the NASA-DID-P100 (Concept) Data Item Description — i.e., high level Definition of the Software, User Definition, and Capabilities and Characteristics.
- Section 4, *External Interface Requirements*, specifies the general system requirements for interfaces between the EPIMS application and its external environment (i.e., all users).
- Section 5, *Requirements Specification*, contains all system requirements for data and user functions.

Note: <u>all</u> current EPIMS baseline requirements are contained in Section 5 of this document.

- Section 6, *Traceability to Parent Requirements*, relates the requirements specified in this document to the requirements of the NASA Handbook (NHB) that specifies EEE parts management policy, the Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for NASA Space Flight Programs, NHB 5300.4(1F) (July 1989), and to the information system requirements of the parent document to this one, the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification (NASA Parts Project Office, 1988).
- Section 7, *Partitioning for Phased Delivery*, specifies which requirements will be implemented in which development phases (currently this section contains only the first phase of EPIMS development: i.e., the EPIMS baseline requirements, which will be implemented in EPIMS 1.0).
- Section 8, *Abbreviations and Acronyms*.
- Section 9, *Glossary.*
- Section 10, *Notes*.
- Appendix A, *EPIMS Data Element Definitions*, defines all data elements to be used in building the EPIMS information model and database structure.

1.6.2 EPIMS Life Cycle Documentation Set

Figure 1: Position of This Document in the EPIMS Life Cycle Documentation Se



1.7 Requirements Approach and Trade-offs

1.7.1 Requirements Approach

1.7.1.1 Definition and Coordination of Requirements

The requirements documented in this version of the Information System Requirements for the Electrical, Electronic, and Electromechanical (EEE) Parts Information Management System (EPIMS) include requirements which were inherited from the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification and requirements which have been identified by users of the EPIMS early prototype systems at GSFC, JSC, and MSFC.

These requirements represent a baseline. They are the basis for the current EPIMS operational prototype.

1.7.1.2 Configuration Control of System Requirements

The EPIMS requirements defined in this document will be placed under configuration management upon acceptance by the NASA Parts Steering Committee and the Head of Assurance Data Systems. Any future changes to the EPIMS requirements will be fully coordinated through Joint Application Development (JAD) activities involving all NASA centers (see paragraph 1.5, Document Revision Policy, on page 19).

1.7.1.3 Identification and Traceability of Requirements to Design

Each requirement defined in this document will be identified with a unique requirement number, which will appear in brackets [] preceding the text of the requirement.

The current EPIMS prototype functions are directly traceable to the provisional baseline requirements defined in this document. This traceability will be documented in the Information System Design for the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information Management System and in the Information System Assurance and Test Procedures for the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information Management System (EPIMS).

All subsequent EPIMS development and maintenance activities will be based upon the current requirements and functionality as a starting point. Configuration management of any changes shall be maintained relative to the current baseline.

1.7.2 Requirements Trade-offs

In the event that conflicting requirements are identified for the EPIMS, the NASA Parts Project Office will develop and propose ways of reconciling the conflict. Any such trade-

off study and decision-making will be fully coordinated with all NASA centers, and will be subject to final approval by the NASA Parts Steering Committee.

No conflicting requirements have yet been identified for the EPIMS.

2

Related Documentation

2.1 EPIMS Documents

2.1.1 NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification

NASA Parts Project Office, September 1988.

2.1.2 Electrical, Electronic, and Electromechanical (EEE) Parts Information Management System (EPIMS) System Requirements Definition Document (RDD)

Space Station Freedom (SSF) Safety and Product Assurance (S&PA) Information Planning Group (IPG), July 19, 1989.

2.2 NASA Documents

2.2.1 Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for NASA Space Flight Programs, NHB 5300.4(1F) (July 1989)

NASA Headquarters, Code QR/Reliability, Mainainability, and Quality Assurance Division, National Aeronautics and Space Administration, Washington, DC 20546

2.2.2 NASA Management Instruction NMI 5310.2C: Participation in the Government-Industry Data Exchange Program (GIDEP)

NASA Headquarters, Code QR/Reliability, Mainainability, and Quality Assurance Division, National Aeronautics and Space Administration, Washington, DC 20546

2.2.3 NASA Management Instruction NMI 5310.2D: NASA Alert Reporting of Parts, Materials, and Safety Problems

NASA Headquarters, Code QR/Reliability, Mainainability, and Quality Assurance Division, National Aeronautics and Space Administration, Washington, DC 20546

2.3 Other Reference Documents

2.3.1 Database Language SQL FIPS PUB 127-1

National Technical Information Service (NTIS), February 2, 1990. (Adopts ANSI X3.135-1989 [SQL], which is identical to ISO 9075:1989, and ANSI X3.168-1989 [Embedded SQL] as a Federal Information Processing Standard [FIPS].)

2.3.2 User Interface Component of Applications Portability Profile, FIPS PUB 158-1 (MIT X Window System)

National Technical Information Service (NTIS), October 1, 1992.

3

System Concept Overview

The material in this section is informative, rather than normative: it is provided for information only, and does not contain requirements.

3.1 Introduction

The system concept overview presented in this section is excerpted from the forthcoming EPIMS system concept document, Information System Concept for the EEE Parts Information Management System, which will be issued soon. The same information will be presented in greater detail in the EPIMS system concept document.

3.2 Definition of the Software

EPIMS is conceived as a NASA-wide electronic database system that captures, maintains, and distributes information on EEE parts for all NASA projects.

3.2.1 Purpose and Scope

The purpose of EPIMS is to provide automated engineering information management for EEE parts reliability, quality assurance, design support, and cost control with an agency-wide, integrated, on-line data system accessible to all NASA projects, contractors, and supporting personnel.

The scope of EPIMS will include storage of and access to EEE part selection,availability, qualification, usage, test, field history, and inventory data; electronic submittal of contractual data requirements; and automated support for parts management tasks for all NASA projects and for the NASA Standard Parts Program.

3.2.2 Goals and Objectives

The principal design goals of EPIMS are to:

- Integrate NASA EEE parts management with system design activities;
- Capture NASA project data and deliverables electronically;
- Share parts and design data among all NASA projects;
- Automate tasks for NASA EEE parts engineers and managers;
- Build a NASA EEE parts engineering and design “corporate memory”.

3.2.3 Description

A top-level Data Flow Diagram of the baseline EPIMS is shown in Figure 2. EPIMS Interface and Data Flow Overview — Level 0, on page 29.

3.2.4 Policies and Standards

The policies or standards relevant to EPIMS include both domain standards and policies (NASA EEE parts policies) and metadata standards (system and software standards).

3.2.4.1 EEE Parts Domain Standards and Policies

All policy documents are cited in Section 2, Reference Documentation. The most important policy organ relative to EPIMS is:

- The Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for NASA Space Flight Programs, NHB 5300.4(1F) (July 1989), which defines the NASA requirements for EEE parts management and control for NASA spaceflight project.

3.2.4.2 System, Software, and Metadata Standards

The System, Software, and Metadata Standards applicable to EPIMS are:

- The SQL standard, Database Language SQL FIPS PUB 127-1 (a NIST Application Portability Profile standard).
- The POSIX (IEEE 1003.1, FIPS 151-1) operating system standard (a NIST Application Portability Profile standard)
- The X Windows graphic user interface (GUI) standard (a NIST Application Portability Profile standard)
- Computer-Aided Acquisition and Logistics Support (CALS) standards for data, including ISO8879, the Standard Generalized Mark-up Language (SGML), the Initial Graphics Exchange Specification (IGES), and others.

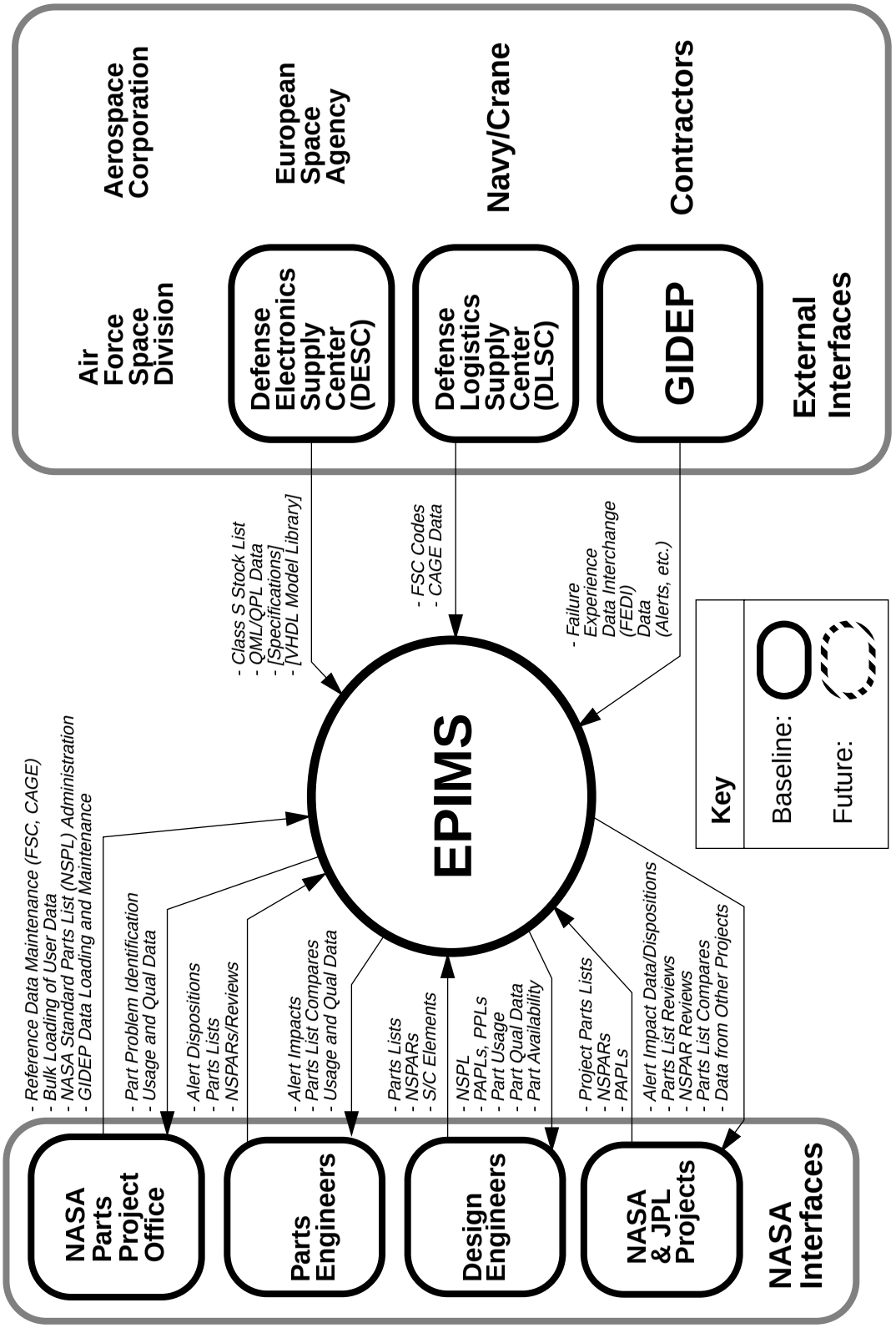


Figure 2. EPIMS Interface and Data Flow Overview — Level 0

- ISO 10303, or STEP (Standard for Exchange of Product Model Data), an international standard for data exchange, Concurrent Engineering (CE), CAD integration

SQL, POSIX, and X Windows are integral to the EPIMS concept, and are to be implemented in the EPIMS 1.0 baseline. The CALS and ISO 10303 (STEP) standards will be implemented in future releases of EPIMS. At this writing, the ISO 10303 electrical standard is still in draft form.

3.3 User Community Definition

3.3.1 Primary Users

- NASA Center EEE Parts Managers
- NPPO Manager, NPPO engineers, and NPPO support contractor engineers
- All NASA and JPL Project Parts Engineers and Design Engineers
- All other NASA personnel with EEE parts data requirements

3.3.2 Secondary Users

- Space Agencies: NASDA (Japan), ESA (Europe), and CSA (Canada)
- DoD: DESC, Navy-CRANE, Air Force Space Systems Division
- Support Contractors: Aerospace Corp., RAC
- NASA OEM's: GE Astro, Hughes, TRW, Rockwell, MacDonnell-Douglas

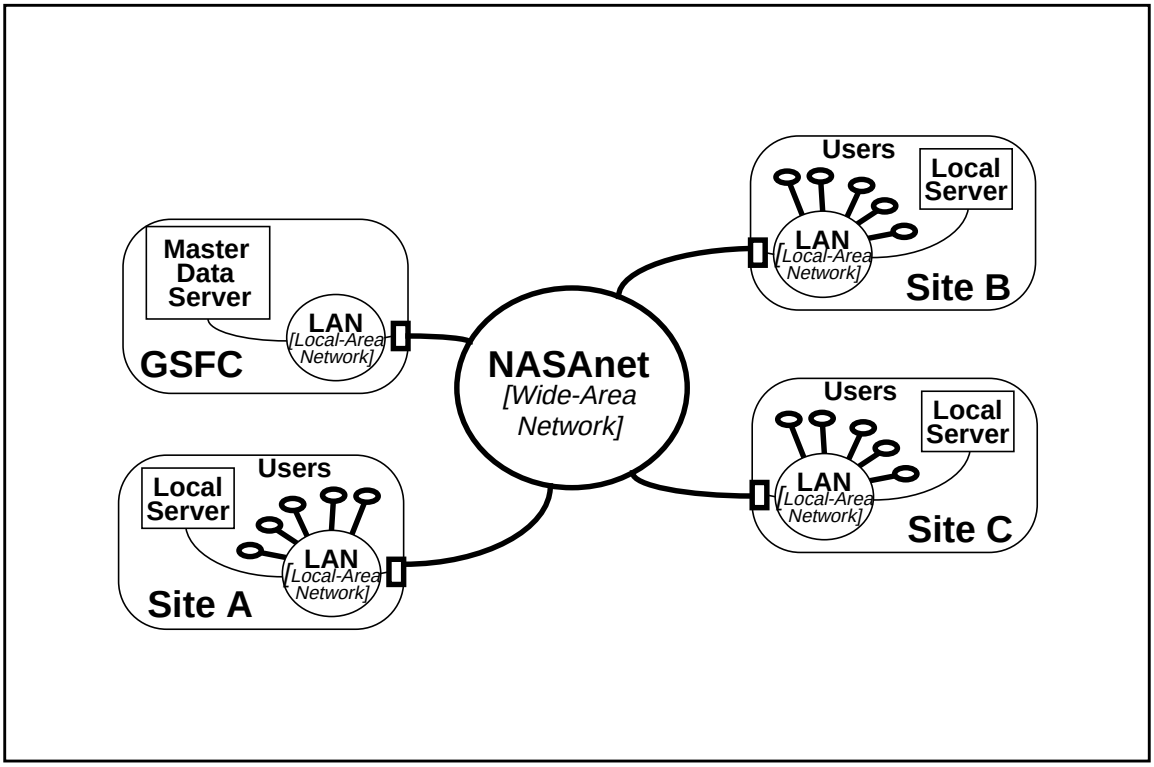
3.4 Capabilities and Characteristics

3.4.1 Architecture

3.4.1.1 Multi-Tiered Client-Server Architecture

The system architecture concept for EPIMS is based on a multi-tiered client-server structure, in which a Master Data Server maintains and serves all EPIMS data to the local sites, or nodes (initially, the nodes are only the NASA centers and JPL). Each local site has at least one Local Server machine that runs the EPIMS database client application and communicates directly with the Master Data Server via the Wide-Area Network. Users access EPIMS by logging on to the Local Server, setting the X Windows display to the user machine, and running the EPIMS database client application on the Local Server. A schematic representation of this concept is shown in Figure 2. Multi-Tiered Client-Server Architecture..

Figure 2. Multi-Tiered Client-Server Architecture.



3.4.1.2 Client-Server Roles

The roles of the client and server applications at each level of the system are shown in There are two possible configurations in the present concept. In one, the local server runs the database client application, sending queries to the Master Server and receiving results, which are then displayed on the user's X Window display (which could be on any of several platforms, including PC's, Macintoshes, and Unix workstations). In the second configuration, the user could run the database client application on their own machine, connecting directly to the Master Server. In general, the second option is more demanding on the user's machine, which must have sufficient resources to receive any query results and store them locally, whereas in the X Windows configuration, the user's machine is only running the X Windows software.

3.4.1.3 The EPIMS Application

The concept of the EPIMS application itself is to create a respository for EEE parts data that will enable a tighter coupling between the activities of EEE parts engineers and NASA designers. Quick access to current data is essential to enable the parts engineers to support designers on the part selection and qualification issues that arise early in the formulation of designs for flight hardware.

The main concept here is that EPIMS will provide "one-stop shopping" for EEE parts information for NASA designers, parts engineers, and project personnel.

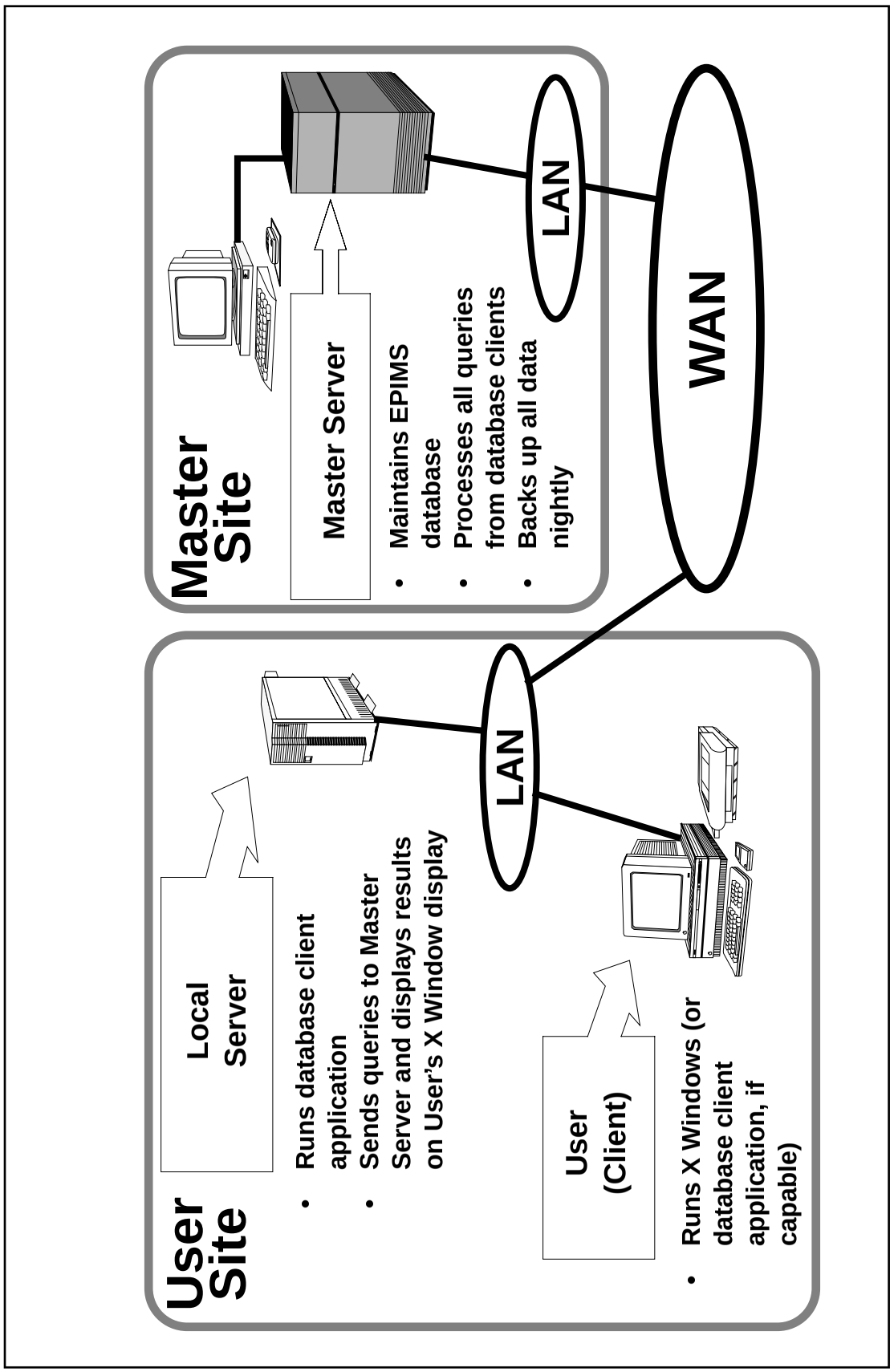


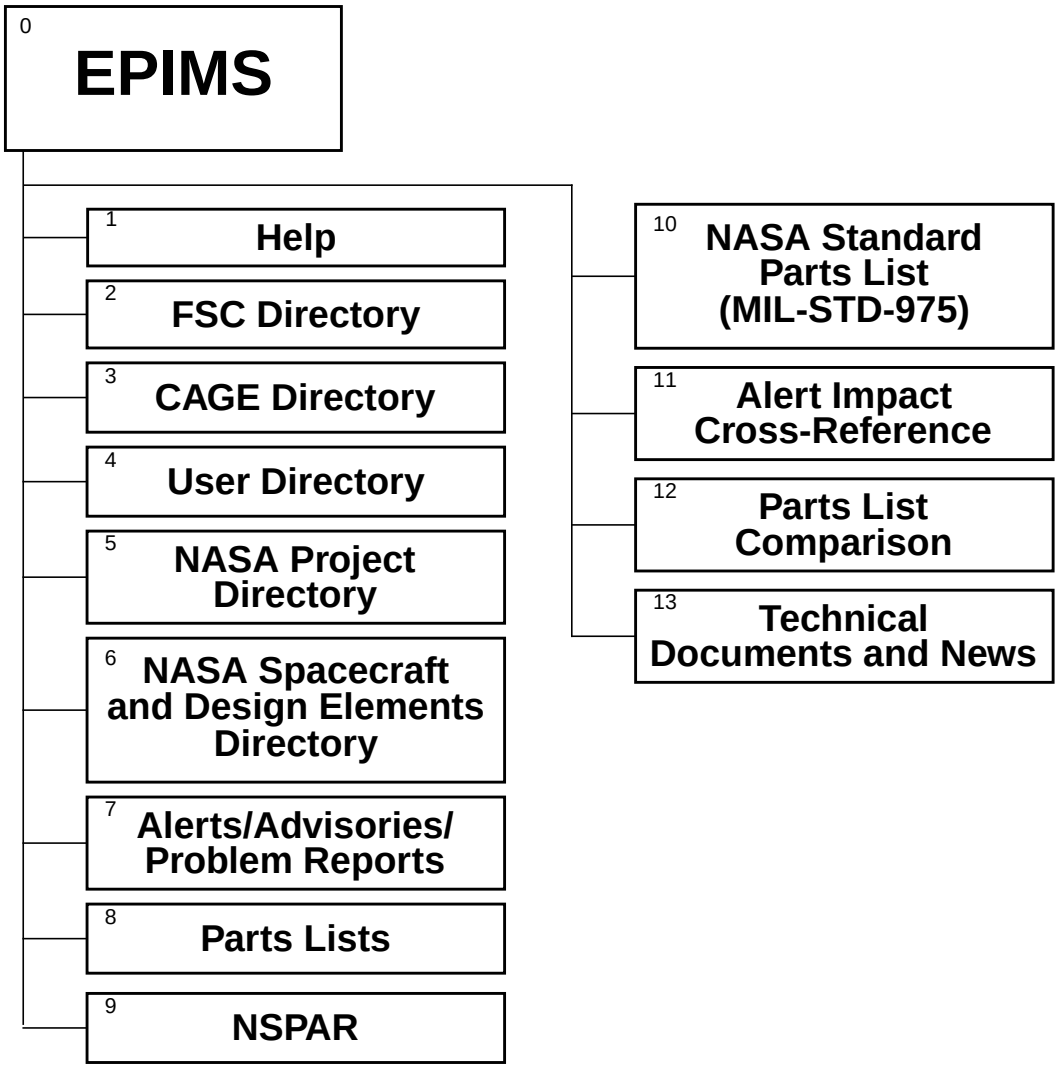
Figure 3. EPIMS Distributed System Client-Server Roles

3.4.2 EPIMS Baseline Functionality

This section summarizes the capabilities that are intended for implementation in the baseline version of EPIMS.

3.4.2.1 EPIMS Baseline Functional Decomposition

Figure 4. EPIMS Baseline Top Level Functional Decomposition: Functional Modules



3.4.2.2 Synopsis of EPIMS Baseline Functional Areas

The following provides an overview of the functions that will be included in the baseline version of EPIMS.

1. Help

- On-line documentation
- Full text search of Help topics
- Print and save-to-file capabilities

2. Federal Supply Class (FSC) Directory

- Complete FSC database (all FSC's used by Defense Logistics Agency)
- Query by FSC number, name, category; wild-card search
- FSC pop-up from other functions for quick look-up and insert

3. Commercial And Government Entity (CAGE) Directory

- Complete CAGE database (all active CAGE codes)
- Query by CAGE number, name; wild-card search
- CAGE pop-up from other functions for quick look-up and insert
- Reports, with view, print, and save-to-file capabilities

4. User Directory and Data Access Control

- Complete EPIMS user database
- Associates each user with organization (CAGE), project(s) (UPN), and access role(s)

5. NASA Project Directory

- Database of all projects with data in EPIMS
- Query by project name, Unique Project Number (UPN); wild-card search
- Project pop-up from other functions for quick look-up and insert

6. NASA Spacecraft and Design Elements Directory

- Database of all spacecraft and design elements in EPIMS
- Hierarchical spacecraft/design element selection list
- Spacecraft and design element data maintenance functions for Project Data Administrator

7. Alerts/Advisories/Problem Reports

- Database of all GIDEP FEDI data (Alerts, Safe-Alerts, Problem Advisories, etc.) and NASA Advisories — EPIMS will provide access to the NASA Alert Reporting System (NARS)
- Query by Alert number, part number, FSC, CAGE code, full-text search on abstract, by date (before, after, between two dates); wild-card search
- Reports, with view, print, and save-to-file capabilities

8. Parts Lists

- Repository support for all project parts lists (Early Potential, As-Designed, As-Built)
- Query by part number, FSC, CAGE code, spacecraft or design element number, name, next higher assembly, etc.; wild-card search
- Parts list data maintenance functions assigned by Project Data Administrator
- Support for multiple versions and a working copy
- Data access control: Project Data Administrator must release data for access to users outside the project
- Reports, with view, print, and save-to-file capabilities

9. Non-Standard Part Approval Requests (NSPAR)

- Repository support for all project NSPAR's
- Query by part number, FSC, CAGE code, spacecraft or design element number, name, etc.; wild-card search
- NSPAR maintenance functions assigned by Project Data Administrator
- Support for multiple versions and submittals
- Data access control: Project Data Administrator must release data for access to users outside the project
- Reports, with view, print, and save-to-file capabilities

10. NASA Standard EEE Parts List (MIL-STD-975)

- Initially, MIL-STD-975J Notice 2; revisions will be added as they are released; older versions will be added as resources allow, beginning with the most recent and working back; this data is maintained by NPPO
- Query by part number, FSC, etc.; wild-card search
- Reports, with view, print, and save-to-file capabilities

11. Alert Impact Cross-Reference

- Automated cross-referencing of Alerts (all GIDEP FEDI data and NASA Advisories) to all project parts lists and NSPAR's in EPIMS — matching done by part number, FSC, and CAGE; "special part numbers" associated with Alerts by NPPO to match imbedded part numbers, aliases
- Cross-reference automatically updated whenever new Alerts, etc., are added; also whenever a parts list or NSPAR is modified
- Query by part number, FSC, CAGE code, spacecraft or design element number, name, etc.; wild-card search
- Automatic notification to project users when new "hits" are found
- Closed loop system for project parts manager to disposition hits
- Reports, with view, print, and save-to-file capabilities

12. Parts List Comparison

- Capability to compare any two parts lists to which the user has read access (MIL-STD-975 can be selected as one of the parts lists, to identify standard parts)
- Can restrict comparison to only look at parts within a selected FSC or set of FSC's
- Matches identified for any type of part number (spec, generic, or manufacturer's)
- Results supplied in the form of 1) a list of matches and 2) for each parts list, a list of unmatched items
- Reports, with view, print, and save-to-file capabilities

13. Technical Documents and News

- On-line documents
- Full text search of documents, recursive search for multiple text strings
- Print and save-to-file capabilities

4

External Interface Requirements

4.1 User Interface Requirements

For ease of organization, this document categorizes user interface requirements as follows:

4.1.1 System Level User Interface Requirements

System level user interface requirements are inherited by EPIMS from the overall ADSO system level user interface requirements, and are considered to be outside the scope of this document.

General user interface requirements address the choice of the overall user interface for the system — e.g., character-based or graphic; screen-oriented or windowing; whether function keys will be used and how; whether a mouse will be used; whether the interface will support monochrome, gray-scale, or color displays, etc.

System level user interface requirements for EPIMS are inherited from the general Assurance Data Systems Office (ADSO) user interface standards, which are applicable to all NASA Assurance System (NAS) applications.

4.1.2 Application Level Interface Requirements

Application level interface requirements will be included in the EPIMS Functional Requirements (Section 5 of this document).

Application level user interface requirements address interface issues related specifically to the entire EPIMS application.

4.1.3 Function Level User Interface Requirements

Function level user interface requirements will be included in the EPIMS Functional Requirements (Section 5 of this document).

Function level user interface requirements address interface issues related to specific functions within the EPIMS application.

4.2 External System Interfaces

The requirements described in this section are candidate requirements — they are not part of the EPIMS baseline requirements and are not to be implemented in EPIMS 1.0.

4.2.1 NASA Systems

It is important for the EPIMS to be able to exchange data or maintain concurrence with other NASA systems as appropriate. This section designates the specific NASA systems with which the EPIMS must interact, and specifies the required types of data to be exchanged and any related requirements for concurrence, administration, monitoring, etc.

4.2.1.1 Space Station Freedom (SSF) Technical and Management Information System (TMIS)

A candidate requirement has been identified for the system to maintain an interface to the SSF TMIS so that data can be exchanged in such a way as to preserve data concurrence to the nearest day. See Candidate EPIMS Functional Requirements (section 5.1.3).

4.2.1.2 Materials and Processes Technical Information System (MAPTIS)

A candidate requirement has been identified for the system to provide the capability to import, maintain, and query data from MAPTIS at Marshall Space Flight Center, and to relate the MAPTIS data to EPIMS data, as appropriate. See Candidate EPIMS Functional Requirements (section 5.1.3).

4.2.2 NASA Contractor Systems

A candidate requirement to provide an EPIMS interface to NASA contractor systems has been identified, but detailed requirements have not yet been defined.

4.2.3 Non-NASA Government Systems

4.2.3.1 Government-Industry Data Exchange Program (GIDEP)

The system shall interface to the GIDEP system so as to enable transfer of GIDEP data for storage. Availability and timeliness of GIDEP data — in particular, of GIDEP Alerts — is essential to requirements for automated searches of parts lists.

All EPIMS requirements for GIDEP data access and maintenance are included in the EPIMS Functional Requirements (Section 5 of this document).

5

Requirements Specification

5.1 Functional Requirements

This section contains requirements defining the tasks (functions) the system will perform. Included are functions which are directly accessed by the general users and project users of the system, functions which are only accessed by the data administrators and database administrators, and functions which the system performs automatically depending on the "state" of the system or in accordance with a schedule.

5.1.1 Functional Subject Areas

For convenience in organizing the detailed functional requirements of the system, the requirements are grouped by Functional Subject Areas. Functional Subject Areas are logical groupings of system functionality that pertain either to a user job function (e.g., the Alert Impact Cross-Reference area, which supports the parts engineer's task to assess the impact of GIDEP Alerts, NASA Advisories and Problem Reports) or to a particular entity in the context of the system's conceptual model, such as a part (Parts Lists), a manufacturer (CAGE Directory), or a type of document (Alerts/Advisories/Problem Reports).

The Functional Subject Areas are divided into Baseline Functional Areas and Candidate Functional Areas. Baseline Functional Areas are those for which a set of requirements has been defined, coordinated with all NASA Centers, and ratified by the NASA Parts Steering Committee. Candidate Functional Areas are those which have been suggested by the user community, and for which requirements have been identified but have not yet been fully coordinated.

Baseline Functional Areas

Note: <u>all</u> Baseline Functional Areas are to be implemented in EPIMS 1.0.

1. Help
2. FSC Directory
3. CAGE Directory
4. User Directory and Data Access Control
5. NASA Project Directory
6. NASA Spacecraft and Design Elements Directory
7. Alerts/Advisories/Problem Reports
8. Parts Lists
9. Non-Standard Part Approval Requests (NSPAR)
10. NASA Standard Parts List (NSPL, or MIL-STD-975)
11. Alert Impact Cross-Reference
12. Parts List Comparison
13. Technical Documents and News

Candidate Functional Areas

Note: <u>no</u> Candidate Functional Areas are to be implemented in EPIMS 1.0.

14. Part List Review
15. Qualified Manufacturers Lists/Qualified Products Lists (QML/QPL) and Manufacturer Surveys
16. User Comments and Change Requests
17. Parts Test and Analysis Data
18. Parts Radiation Test Data
19. Parts Library
20. Data Capture, Upload, and Download
21. Parts Procurement, Tracking, and Inventory
22. Parts Application Information
23. Parts Reliability Data
24. User Technical Interchange Forum

5.1.2 Baseline EPIMS Functional Requirements

The baseline EPIMS functional requirements are those requirements that have been identified, coordinated with all NASA centers, and approved by the NASA Parts Steering Committee. The baseline EPIMS requirements originated almost exclusively in the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification, which is the parent document to this one. See Appendix A for traceability to the parent requirements.

5.1.2.1 Help

These requirements specify an on-line Help function which provides both general information on the system and its data, and specific information on techniques and procedures for the various system functions.

On-Line Help System

5.1.2.1(a) [1] The system shall provide an on-line Help function that can be selected by the user from any element (screen or window) of the user interface.

Window-Specific Help Topics

5.1.2.1(b) [2] Help documentation shall provide specific support for each window of the application.

Access to All Help Topics

5.1.2.1(c) [3] The Help function shall provide access to all on-line Help topics from any user interface element (menu or window) by providing a “pick list” of topics from which a sepcific topic can be selected by title.

Context Sensitivity

5.1.2.1(d) [4] The Help function shall be “context-sensitive” in the following sense: the Help topic presented to the user when Help is called shall pertain to the function and user interface element from which it is called.

Presentation of a Help Topic

5.1.2.1(e) [5] The system shall display Help topics in a scrollable text window.

String Search

5.1.2.1(f) [6] The Help function shall enable the user to search for a user-specified text (string of characters) within a Help topic.

Save-to-FIle Capability

5.1.2.1(g) [7] The Help function shall enable the user to save the text of any selected Help topic to a file.

Print Capability

5.1.2.1(h) [8] The Help function shall enable the user to print the text of any selected Help topic.

5.1.2.2 Federal Supply Class (FSC) Directory

The Defense Logistics Supply Center (DLSC), a facility of the Defense Logistics Agency (DLA), classifies all commodities it uses according to a scheme called Federal Supply Classes (or Classifications) (FSC). This classification is useful to commodity engineers, who can use it to specify an area of interest in searching a database.

FSC Database

5.1.2.2(a) [9] The system shall provide a populated database of all Federal Supply Classes (FSC) applicable to EEE parts, of which each logical record shall include, as a minimum, the FSC name and the FSC code.

Query Capability

5.1.2.2(b) [10] The system shall enable the user to search for FSC's by FSC name, FSC number (also known as FSC code), or FSC category (e.g., mechanical or EEE — a pick list of categories shall be provided). The system shall enable the user to select all FSC records containing any conjunctive ("and") combination of the above selection criteria. The system shall enable the user to clear all search criteria in preparation for a new search.

Query Results Presentation

5.1.2.2(c) [11] The system shall display the set of FSC records resulting from a user query as a list in tabular format. The query result list shall contain columns for FSC number, FSC name, and FSC category. The record count (number of FSC records selected) shall be displayed with the query result list.

Report Capability

5.1.2.2(d) [12] The system shall enable the user to generate a report from the results of an FSC query. The system shall enable the user to view the report on the screen, send it to a system file, or print it.

FSC Look-up Capability

5.1.2.2(e) [13] The system shall provide a look-up capability for the FSC directory that can be called from other functions for which that capability is required (the requirement for access to the FSC look-up will be specified in the requirements for those functions needing it).

FSC Look-up Query

5.1.2.2(f) [14] The FSC look-up capability shall enable the user to select (query) FSC records by FSC number, FSC name, and FSC category (e.g., mechanical or EEE — a pick list of categories shall be provided), and shall enable the use

of “wildcards” (specification of a substring of the data to be selected) in the FSC name and FSC number. The FSC look-up capability shall enable the user to select all FSC records containing any conjunctive (“and”) combination of the above selection criteria. It shall enable the user to clear all search criteria in preparation for a new search.

FSC Look-up Query Results Presentation

5.1.2.2(g) [15] The FSC look-up capability shall display the set of FSC records resulting from a user query as a list in tabular format. The query result list shall contain columns for FSC number, FSC name, and FSC category. The record count (number of FSC records selected) shall be displayed with the query result list.

FSC Look-up Insertion

5.1.2.2(h) [16] The FSC look-up capability shall enable the user to insert a selected FSC from the look-up into the field in the interface element (screen or window) of the function from which the FSC look-up was called.

5.1.2.3 Commercial And Government Entity (CAGE) Directory

Commercial And Government Entity (CAGE) codes are assigned to entities involved in commercial or government enterprises with the Defense Logistics Agency (DLA). The CAGE codes and related information are documented in the H4/H8 handbooks, which are maintained by DLA and regularly updated.

CAGE Database

5.1.2.3(a) [17] The system shall provide a populated database of all active Commercial And Government Entity (CAGE) codes, which shall include the CAGE code, CAGE Name, CAGE Manufacturer Code, street address, city, state, ZIP code, phone number, Former CAGE Code, Former CAGE Code Information, Government Code, SIC Code, Status Code, and Manufacturer Code. The CAGE directory data shall be updated quarterly by the Global Data Administrator (GDA) to maintain concurrence with the parent data set (the H4/H8 standard).

Support for State as Separate Data Element

5.1.2.3(b) [18] The system shall be capable of storing the standard abbreviation for the state in which a CAGE is located, so that this can be extracted from the Defense Logistics Agency (DLA) CAGE data and stored as a separate field to support selection of CAGE’s by state or region.

Query Capability

5.1.2.3(c) [19] The system shall enable the user to select (query) CAGE records by CAGE code, name, address, city, or state. The query interface shall support the use of wildcards in any of these selection criteria. The system shall enable the user to select all CAGE records containing a given text string in any text field (all those specified above except state). The system shall enable the user to select all CAGE records

containing any conjunctive (“and”) combination of the above selection criteria. The system shall enable the user to search all fields for a text string. The system shall enable the user to clear all search criteria in preparation for a new search.

Display of Query Result List

5.1.2.3(d) [20] The system shall display the set of CAGE records resulting from a user query as a list in tabular format. The query result list shall contain columns for CAGE Code, CAGE Name, CAGE Manufacturer Code, and Former CAGE Code. The record count (number of CAGE records selected) shall be displayed with the query result list.

Display of Detailed CAGE Information

5.1.2.3(e) [21] The system shall enable the user to display detailed information for any CAGE record selected from the query result list (see requirement [20]). The detailed information shall include all information specified in requirement [17] for the selected CAGE.

Report Capability

5.1.2.3(f) [22] The system shall enable the user to generate a report from the results of a CAGE query. The system shall enable the user to view the report on the screen, send it to a system file, or print it.

Add Capability (Administrator only)

5.1.2.3(g) [23] The system shall enable the Global Data Administrator (GDA) to add a new CAGE record to the database.

Modify Capability (Administrator only)

5.1.2.3(h) [24] The system shall enable the Global Data Administrator (GDA) to modify any data field in an existing CAGE record in the database. The system shall enable the GDA to select CAGE records for modification by the selection methods described in requirement [19].

Delete Capability (Administrator only)

5.1.2.3(i) [25] The system shall enable the Global Data Administrator (GDA) to delete any CAGE record from the database. The system shall enable the GDA to select CAGE records for deletion by the selection methods described in requirement [19].

CAGE Look-up Capability

5.1.2.3(j) [26] The system shall provide a CAGE look-up capability for accessing the CAGE directory that can be called from other functions for which that capability is required (the requirement for access to CAGE look-up capability will be specified in the requirements for those functions needing it).

CAGE Look-up Query

5.1.2.3(k) [27] The CAGE look-up capability shall enable the user to select (query) CAGE records by CAGE Code, and name. The query interface shall support the use of wildcards in any of these selection criteria. The CAGE Code look-up shall enable the user to select all CAGE records containing any conjunctive (“and”) combination of the above selection criteria. The CAGE Code look-up shall enable the user to restrict the selection to NASA center CAGE’s only. It shall enable the user to clear all search criteria in preparation for a new search.

CAGE Look-up Query Results Presentation

5.1.2.3(l) [28] The CAGE look-up capability shall display the set of CAGE records resulting from a user query as a list in tabular format. The query result list shall contain columns for CAGE Code, and CAGE Name. The record count (number of CAGE records selected) shall be displayed with the query result list.

CAGE Look-up Detailed Information

5.1.2.3(m) [29] The CAGE look-up capability shall enable the user to display detailed information for any CAGE record selected from the query result list (see requirement [28]). The detailed information shall include the data elements specified in requirement [17] for the selected CAGE.

CAGE Look-up Insertion

5.1.2.3(n) [30] The CAGE look-up capability shall enable the user to insert a selected CAGE Code from the look-up into the field in the interface element (screen or window) of the function from which the CAGE Code look-up was called.

5.1.2.4 User Directory and Data Access Control

User Directory Repository

5.1.2.4(a) [31] The system shall provide a User Directory repository (storage area) for information about users, which will support, as a minimum: name, User ID, CAGE code of the user’s location, associated NASA center, mail code, organization code, phone, FAX, building and room, NASA projects for which the user has authorized access, and any particular roles of the user in EPIMS.

Query Capability

5.1.2.4(b) [32] The system shall enable any user to query the User Directory for system users by User ID, first name, last name, location (location CAGE code), NASA center (NASA center CAGE code), or NASA project (UPN). The query interface shall support the use of wildcards in the specification of User ID, first name, last name, location (location CAGE code), NASA center (NASA center CAGE code). The system shall enable the user to select all records containing any conjunctive (“and”) combination of the above selection criteria. The system shall enable the user to clear all search criteria in preparation for a new search.

Commercial And Government Entity (CAGE) Look-up

5.1.2.4(c) [33] The User Directory query interface shall provide access to the CAGE look-up capability (see requirements [26] through [30]) to enable selection of a valid CAGE for the location (location CAGE code) and NASA center (NASA center CAGE code) query criteria.

Project Directory Look-up

5.1.2.4(d) [34] The User Directory query interface shall provide access to the Project Directory look-up capability (see requirements [48] through [51]).

Display of Query Result List

5.1.2.4(e) [35] The system shall display the set of User Directory records resulting from a user query as a list in tabular format. The query result list shall contain columns for User ID, name, and location name. The record count (number of User Directory records selected) shall be displayed with the query result list.

Display of Detailed User Directory Information

5.1.2.4(f) [36] The User Directory shall enable the user to display detailed information for any User Directory record selected from the query result list (see requirement [35]). The detailed information shall include User ID, first name, middle initial, last name, location CAGE code, center CAGE code, mail code, organization code, phone number, FAX number, building, room, and a list of all applicable user roles and data access roles, including the user role code number and description with applicable UPN and project name code (for project-dependent roles) and CAGE code (for organization-dependent roles). The system shall enable the user to display the list of applicable user roles and data access roles sorted either by project or by CAGE code. The User Directory detailed information shall also provide access to detailed CAGE information (see requirement [21]) on the location CAGE code and center CAGE code.

Add Capability (Administrator only)

5.1.2.4(g) [37] The system shall enable the Global Data Administrator (GDA) and the Local System Administrator (LSA) to add records to the User Directory. The system shall enable the GDA and LSA to create a new record by copying and modifying an existing record.

Modify Capability (Administrator only)

5.1.2.4(h) [38] The system shall enable the Global Data Administrator (GDA) and the Local System Administrator (LSA) to modify records in the User Directory. The system shall enable the GDA and LSA to select records for modification from the User Directory by the selection methods described in requirement [32].

Delete Capability (Administrator only)

5.1.2.4(i) [39] The system shall enable the Global Data Administrator (GDA) and the Local System Administrator (LSA) to delete records from the User Directory. The system shall enable the GDA and LSA to select records for deletion from the User Directory by the selection methods described in requirement [32].

User Types

5.1.2.4(j) [40] The system shall support the User Types specified in Table 1: User Types, which begins on page 50 of this document.

Data Access Roles

5.1.2.4(k) [41] The system shall support the Data Access Roles specified in Table 2: Data Access Roles, which begins on page 51 of this document.

Table 1: User Types

User Type	Assigned by	Assigns Roles and User Types	Notes
Global Data Administrator (GDA)	NASA Assurance System (NAS) Administrator — Assurance Data Systems Office (ADSO)	• Local System Administrator • Project Data Administrator • Any others, as necessary	• The Global Data Administrator user type is used only by the ADSO and the Database Application Administrator (DBAA) — for EPIMS, the DBAA is the NASA Parts Project Office (NPPO) • The GDA assigns Local System Administrator roles for the NAS nodes, and can assign any other local roles if requested to do so by the Local System Administrator
Local System Administrator (LSA)	• Local System Administrator (LSA) or • Global Data Administrator (GDA)	• Project Data Administrator • Any Data Access Roles for local users, as necessary	• The Local System Administrator user type is initially assigned by the ADSO for the local NAS node. The Local System Administrator can then assign LSA status to other users at the local node, as necessary. • The LSA is the system administrator for the local NAS data server. The LSA assigns user id's on the server and takes care of all system administration for the local NAS data server.
Project Data Administrator (PDA)	• PDA, • LSA, or • GDA	Data Access Roles: • Initiate • Coordinate • Review • Read • Approve • Release	• The Project Data Administrator user type is initially assigned by the LSA or GDA, and is applicable for a particular Project. The Project Data Administrator can then assign PDA status to other users at the local node, as necessary. • The Project Data Administrator assigns, for their project, Project Users, and access roles for any users who need access to information internal to the project.
Project User	• PDA, • LSA, or • GDA	[none]	• The Project User user type is assigned by the PDA, LSA, or GDA, and is specific to a particular Project. • Project Users have read access to all unreleased project data for the projects to which they are granted access.
General User	• PDA, • LSA, or • GDA	[none]	• This is the default user type for any new user. • The General User has access to all released data in the system.

Table 2: Data Access Roles (Sheet 1 of 2)

Role	Assigned by	Assigns Roles	Notes
Initiate	• Project Data Administrator, (PDA) • Local System Administrator (LSA), or • Global Data Administrator (GDA)	[none]	• Initiate access is assigned relative to a project. • Initiate access can only be assigned to a Project User for the project on which it is assigned. • A user with Initiate access for a project can initiate (create) any type of data for that project.
Coordinate	• PDA, • LSA, or • GDA	• Review • Read	• Coordinate access is assigned relative to a project and an organization (CAGE). • Coordinate access can only be assigned to a Project User for the project on which it is assigned. • A user with Coordinate access for a project and organization (CAGE) can assign Review and Read access roles to users in that organization (CAGE) for that project. In effect, the user with Coordinate access sets up a “routing” by designating users with Read and/or Review access.
Review	• PDA, • LSA, • GDA, or • User with Coordinate access	[none]	• Review access is assigned relative to a project. • Review access can only be assigned to a Project User for the project on which it is assigned. • Review access for a project gives the user write access to the internal review comments field, which is used to record review comments for access within that project only. The internal review comments related to a data item are never released to users outside the project, even when the related data item is released. (For example, the internal review comments made by a support contractor on a NSPAR remain a permanent record within the project, only accessible to Project Users assigned to that project; however, the official comments on the NSPAR are part of the NSPAR and are released with it.)

Table 2: Data Access Roles (Sheet 2 of 2)

Role	Assigned by	Assigns Roles	Notes
Read	• PDA, • LSA, • GDA, or • User with Coordinate access	[none]	• Read access is assigned relative to a project • Read access can be assigned to any user who would not otherwise have access to unreleased project data for the specified project. • Read access for a project gives the user read-only access to all unreleased project data for the specified project.
Approve	• PDA, • LSA, or • GDA	[none]	• Approve access is assigned relative to a project • Approve access can only be assigned to a Project User for the project on which it is assigned. • Approve access for a project gives the user write access to the official review comment fields associated with any data item owned by that project. The official review comment fields are used to record review comments representing the official position of a NASA review activity, to be retained with the data item and released with it when the data item is released.
Release	• PDA, • LSA, or • GDA	[none]	• Release access is assigned relative to a project. • Release access can only be assigned to a Project User for the project on which it is assigned. • Release access for a project gives the user access to the release function for that project, which may be simply a button to push or an option to choose. A user with release access to a project can release any data for that project — e.g., a parts list or a NSPAR.

5.1.2.5 NASA Project Directory

Project Directory Repository

5.1.2.5(a) [42] The system shall provide a NASA Project Directory repository (storage area) for information about NASA projects, which shall support, as a minimum, the following attributes: project name, project name code, Unique Project Number (UPN), NASA center name, NASA center acronym, NASA center CAGE code, spacecraft name, and spacecraft name code..

Query Capability

5.1.2.5(b) [43] The system shall enable the user to select (query) NASA project information from the NASA Project Directory by Unique Project Number (UPN), project name, project name code, or NASA center (a pick list of NASA centers shall be provided). The query interface shall support the use of wildcards in the specification of the Unique Project Number (UPN), project name, and project name code. The system shall enable the user to select all records containing any conjunctive (“and”) combination of the above selection criteria.

Query Results Presentation

5.1.2.5(c) [44] The system shall display the set of NASA Project Directory records resulting from a user query as a list in tabular format. The query result list shall contain columns for UPN, project name code, project name, and NASA center acronym. The record count (number of records selected) shall be displayed with the query result list.

Add Capability (Global Data Administrator only)

5.1.2.5(d) [45] The system shall enable the Global Data Administrator (GDA) to add records to the NASA Project Directory.

Modify Capability (Global Data Administrator only)

5.1.2.5(e) [46] The system shall enable the Global Data Administrator (GDA) to modify records in the NASA Project Directory. The system shall enable the GDA to select records for modification from the NASA Project Directory by the selection methods described in requirement [43].

Delete Capability (Global Data Administrator only)

5.1.2.5(f) [47] The system shall enable the Global Data Administrator (GDA) to delete records from the NASA Project Directory. The system shall enable the GDA to select records for deletion from the NASA Project Directory by the selection methods described in requirement [43].

Project Look-up Capability

5.1.2.5(g) [48] The system shall provide a Project look-up capability for the NASA Project Directory that can be called from other functions for which that capability is required (the requirement for access to the Project look-up capability will be specified in the requirements for those functions needing it).

Project Look-up Query Capability

5.1.2.5(h) [49] The Project look-up capability shall enable the user to select (query) project directory records by Unique Project Number (UPN), project name code, project name, and NASA center administering the project. The look-up query interface shall support the use of wildcards in the specification of the UPN, project name, and project name code. A pick list of NASA centers shall be provided. The Project look-up capability shall enable the user to select all records containing any conjunctive ("and") combination of the above selection criteria. The Project look-up capability shall enable the user to clear all search criteria in preparation for a new search.

Project Look-up Query Results Presentation

5.1.2.5(i) [50] The Project look-up capability shall display the set of NASA Project Directory records resulting from a user query as a list in tabular format. The query result list shall contain columns for UPN, project name code, project name, and NASA center acronym. The record count (number of CAGE records selected) shall be displayed with the query result list.

Project Look-up Insertion

5.1.2.5(j) [51] The Project look-up capability shall enable the user to insert a selected Project Name Code and/or UPN from the look-up into the field in the interface element (screen or window) of the function from which the Project look-up was called.

5.1.2.6 NASA Spacecraft and Design Elements Directory

NASA Spacecraft and Design Elements Directory Repository

5.1.2.6(a) [52] The system shall provide a repository for NASA design elements (spacecraft, systems, subsystems, etc.), the NASA Spacecraft and Design Elements Directory, which shall initially support administrative information and the assembly hierarchy of the design elements. The repository shall support the following attributes for design elements (see Appendix A for definitions and more information): Project Name Code/UPN, Spacecraft or Element Number, Name, Name Code, Serial Number, Drawing Number, and Criticality Code.

Data Access Control

5.1.2.6(b) [53] The NASA Spacecraft and Design Elements Directory shall implement data access controls for design element information below the spacecraft level. The data access controls shall provide data access based upon the Data Access Roles

specified by requirement [41]. The Global Data Administrators (GDA), Local System Administrators (LSA), all Project Data Administrators (PDA), and all Project Users shall have read access to design elements below the spacecraft level for any project. Other users to whom the GDA or PDA has given Read data access for a specific project shall have read access to design elements below the spacecraft level for that project. NASA design element information below the spacecraft level shall not have a "release" function by which general access can be granted, but read access to the data for a specific project can be granted to specific users by the GDA or PDA, by assigning the Read data access role to that user for that project. The purpose of this requirement is to preserve the confidentiality of sensitive or proprietary design data.

Query Capability

5.1.2.6(c) [54] The NASA Spacecraft and Design Elements Directory shall enable the user with appropriate data access privileges to query the directory by UPN (access to the Project Look-up function specified in requirements [48] through [51] shall be provided), Spacecraft/Element Number, Name, Name Code, Serial Number, Drawing Number, Criticality Code, or by any conjunctive ("and") combination of these attributes. The query interface shall support the use of wildcards in the query specification of Spacecraft or Element Name, Name Code, Serial Number, or Drawing Number. The NASA Spacecraft and Design Element query capability shall enable the user to clear all search criteria in preparation for a new search.

Query Results Presentation

5.1.2.6(d) [55] The system shall display the set of Spacecraft and Design Elements resulting from a user query as a scrollable list in tabular format. The query result list shall contain columns for Project Name Code, Spacecraft or Element Number, Name Code, Element Level, and Element Name.

Add Capability (Project Data Administrator only)

5.1.2.6(e) [56] The system shall enable the Project Data Administrator (PDA) to add records for that project to the NASA Spacecraft and Design Elements Directory.

Modify Capability (Project Data Administrator only)

5.1.2.6(f) [57] The system shall enable the Project Data Administrator (PDA) to modify a record selected from that project's records in the NASA Spacecraft and Design Elements Directory. The system shall enable the PDA to select records for modification by the selection methods described in requirement [43].

Delete Capability (Project Data Administrator only)

5.1.2.6(g) [58] The system shall enable the Project Data Administrator (PDA) to delete a selected record from that project's records in the NASA Spacecraft and Design Elements Directory. The system shall enable the PDA to select records for deletion by the selection methods described in requirement [43].

NASA Spacecraft and Design Elements Directory Look-up Capability

5.1.2.6(h) [59] The system shall provide a NASA Spacecraft and Design Element look-up capability that will provide access to the NASA Spacecraft and Design Elements Directory from other functions for which that capability is required (the requirement for access to the NASA Spacecraft and Design Element look-up capability will be specified in the requirements for those functions needing it).

Look-up Query Capability

5.1.2.6(i) [60] The NASA Spacecraft and Design Element look-up capability shall enable the user to select NASA Spacecraft and Design Elements Directory records for a particular Project Name Code from a nested pick list of spacecraft design elements.

Look-up Query Results Presentation

5.1.2.6(j) [61] The NASA Spacecraft and Design Element look-up capability shall display the element selected within a hierarchy showing each of its parent elements up to the spacecraft level.

Look-up Insertion

5.1.2.6(k) [62] The NASA Spacecraft and Design Element look-up capability shall enable the user to execute a query based upon the selected NASA Spacecraft or Design Element.

5.1.2.7 Alerts/Advisories/Problem Reports

The NASA Alert Reporting System (NARS), an information system within the NASA Assurance System (NAS), will support the requirements defined in this section of the EPIMS requirements. EPIMS will be closely linked to NARS, and will provide access for EPIMS users to NARS and cross-reference EPIMS data to NARS data as appropriate. The requirements defined in this section are described independently of NARS or any particular implementation system, and are intended to be maintained by the NASA Parts Project Office as representing the requirements in this functional area to support the NASA EEE parts assurance activities at all NASA centers. They will be maintained separately in this document, but should be regarded as input to the overall requirements for NARS, which gathers its requirements from all NASA activities.

GIDEP FEDI Repository

5.1.2.7(a) [63] The system shall provide a consolidated repository (storage area) for field failure and problem data on EEE parts, which will initially include Government-Industry Data Exchange Program (GIDEP) Failure Experience Data Interchange (FEDI) reports (of which the highest priority are Alerts and Safe-Alerts) and NASA Advisories.

Repository Data Elements

5.1.2.7(b) [64] The system shall provide a repository (storage area) for GIDEP FEDI data, to include GIDEP Alerts, Safe-Alerts, Problem Advisories, Diminishing Manufacturing Sources, Product Change Notices, and Agency Action Notices. This repository shall support, as a minimum, the following data elements: the Alert Number, Issue Date, Title/Description, Summary (the abstract as it appears on the GIDEP Electronic Bulletin Board), and information on each item referenced by the FEDI data record, including the FSC number, manufacturer's CAGE code, part number, and lot date code(s).

Add Capability (Global Data Administrator only)

5.1.2.7(c) [65] The system shall enable the Global Data Administrator (GDA) to add records to the GIDEP FEDI repository.

Modify Capability (Global Data Administrator only)

5.1.2.7(d) [66] The system shall enable the Global Data Administrator (GDA) to modify records in the GIDEP FEDI repository. The system shall enable the GDA to select records for modification from the GIDEP FEDI repository by the selection methods described in requirement [72].

Delete Capability (Global Data Administrator only)

5.1.2.7(e) [67] The system shall enable the Global Data Administrator (GDA) to delete records from the GIDEP FEDI repository. The system shall enable the GDA to select records for deletion from the GIDEP FEDI repository by the selection methods described in requirement [72].

NASA Advisories Repository

5.1.2.7(f) [68] The system shall provide a repository (storage area) for NASA Advisories. This repository shall support, as a minimum, the following data elements: the Advisory Number, Issue Date, Title/Description, full text of the Advisory, and information on each item referenced by the Advisory, including the FSC number, manufacturer's CAGE code, part number, and lot date code(s)

Add Capability (Global Data Administrator only)

5.1.2.7(g) [69] The system shall enable the Global Data Administrator (GDA) to add NASA Advisories.

Modify Capability (Global Data Administrator only)

5.1.2.7(h) [70] The system shall enable the Global Data Administrator (GDA) to modify NASA Advisories. The system shall enable the GDA to select NASA Advisories for modification by the selection methods described in requirement [72].

Delete Capability (Global Data Administrator only)

5.1.2.7(i) [71] The system shall enable the Global Data Administrator (GDA) to delete NASA Advisories. The system shall enable the GDA to select NASA Advisories for deletion by the selection methods described in requirement [72].

Query Capability

5.1.2.7(j) [72] The system shall enable the user to select GIDEP FEDI and NASA Advisory records by Alert Number, part number, FSC number, or CAGE code, also enabling the use of "wildcards" in Alert Number or part number; or by FEDI record type ("Alert Code" — e.g., Alerts, Safe-Alerts, etc. — types as specified in requirement [64], or NASA Advisories); or by Issue Date as before, after, or equal to a given date or between two specified dates. The system shall enable the user to select records by any conjunctive ("and") combination of these search criteria. The system shall enable the user to clear all search criteria in preparation to a new search.

FSC Look-up for Query

5.1.2.7(k) [73] The system shall enable the user to access the FSC look-up capability (see requirements [13] through [16]) to look up a valid FSC when making a query by FSC on GIDEP or NASA Advisory data.

CAGE Look-up for Query

5.1.2.7(l) [74] The system shall enable the user to access the CAGE look-up capability (see requirements [26] through [30]) to look up a valid CAGE when making a query by CAGE on GIDEP or NASA Advisory data.

Alert/Advisory Query Results Presentation

5.1.2.7(m) [75] The system shall display the set of GIDEP FEDI and NASA Advisory records resulting from a user query as a list in tabular format. The query result list shall contain columns for Alert number, Alert code, Title/Description, FSC number, CAGE Code, and Alert Issue Date. The record count (number of records selected) shall be displayed with the query result list.

Display of Detailed Alert/Advisory Information

5.1.2.7(n) [76] The system shall enable the user to display all of the data specified in requirements [64] (for GIDEP FEDI records) or [68] (for NASA Advisories) for any record selected from the query result list (see requirement [75]).

Alert/Advisory Report Capability

5.1.2.7(o) [77] The system shall enable the user to generate a report from the results of an Alert/Advisory query. The system shall enable the user to view the report on the screen, send it to a system file, or print it.

5.1.2.8 Parts Lists

These requirements include support for various types of parts lists, including:

- *project parts lists*

  E.g.: Early Potential Parts Lists [EPPL], As-Designed Parts Lists [ADPL], and As-Built Parts Lists [ABPL]

- *part selection lists*

  E.g.: Project-Approved Parts Lists [PAPL], Preferred Parts Lists [PPL], and Institutional Parts Lists [IPL]

- *stock and inventory lists*

  E.g., the Defense Electronics Supply Center's [DESC] Class S Stocking Program list or a parts inventory list for a NASA project).

An Important Note on Parts List "Versions" in EPIMS

The concept of versioning as specified in these requirements refers only to the control and tracking of parts lists captured from external sources, and not to the configuration management of the engineering design items themselves — in general, the EPIMS parts list versions may or may not correspond to the versions assigned within the design process to the design items whose designations and configurations are managed there. Thus, when the EPIMS requirements refer to "creating", "modifying", etc., a parts list version, this refers only to the loading of the parts list version into EPIMS and assignment of a version number to distinguish between successive instances of the same type of parts list for a given design item (version). Any observed correspondence between these EPIMS parts list version numbers and the version numbers of the related design items is coincidental (although the goal is obviously to coordinate EPIMS as closely as possible with the engineering process, and to maintain the correct correspondence between parts list versions and their associated design item versions).

Parts List Repository

5.1.2.8(a) [78] The system shall provide a repository (storage area) that will support: 1) project parts lists of spacecraft or ground system design elements; 2) part selection lists; and 3) stock and inventory lists. The system shall be capable of storing and differentiating between Early Potential Parts Lists (EPPL), As-Designed Parts Lists (ADPL), As-Built Parts Lists (ABPL), Project-Approved Parts Lists (PAPL), Preferred Parts Lists (PPL), Institutional Parts Lists (IPL), Stocking Lists, and Inventory Lists. This repository shall support, as a minimum, the following attributes (see Appendix A for definitions and other information) for the design element as a whole: the project, spacecraft, all higher assemblies containing the design element, version, type (e.g., Working, Early Potential, As-Designed, As-Built), date (created), and contact person. For each part on a parts list, the following attributes shall be supported (see Appendix A for definitions): Federal Supply Class (FSC), specification number, specification part number, generic part number, manufacturer part number, manufacturer CAGE code, description, screening specification number, failure rate level, NASA NSPAR number, National Stock Number (NSN), lot date code, serial number, and reference location.

Parts List Data Access Control

5.1.2.8(b) [79] The system shall implement data access controls for parts lists. The data access controls shall provide data access in accordance with the Data Access Roles specified by requirement [41].

Parts List Selection

5.1.2.8(c) [80] The system shall enable the user to select and display a parts list to which the user has access permission (as determined by the user's Data Access Roles and the release status of the project, spacecraft, or design element) by project, spacecraft, or any design element for which that information has been entered into EPIMS, or by any conjunctive ("and") combination of these attributes. If the parts list specified by the user has more than one version, the query capability shall enable the user to specify a version, or to select "all released versions."

Part and Parts List Selection by Parts List Type

5.1.2.8(d) [81] The parts list query interface shall provide the user with the option to query against all types of parts lists (EPPL, ADPL, ABPL, PAPL, PPL, etc.) or against any one type, or by any conjunctive ("and") combination of parts list type with the attributes specified in requirement [80].

Part and Parts List Selection by Project

5.1.2.8(e) [82] The parts list query interface shall provide the following options for specifying the parts lists from which to select parts: all projects or a specified project. If the user elects to specify a project, the parts list query interface shall provide access to the project look-up capability (see requirements [48] through [51]).

NASA Systems and Design Entities Look-up

5.1.2.8(f) [83] If the user specifies a project (see requirement [82]) as a condition for a query on parts lists, the parts list query interface shall provide the user the option to access the NASA Spacecraft and Design Elements look-up capability (see requirements [59] through [62]) to select a valid spacecraft or design element for incorporation into the query. Note that access to elements lower than the spacecraft level is restricted by requirement [53].

Part Selection

5.1.2.8(g) [84] The parts list query interface shall enable the user to select parts by specification part number, generic part number, CAGE code, Federal Supply Class (FSC), or by any conjunctive ("and") combination of these attributes. The query interface shall support the use of wildcards in the query specification of specification part number and generic part number.

Query Results Presentation

5.1.2.8(h) [85] The system shall display as a list in tabular format the set of parts resulting from a user query on parts lists. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a parts

list query: the project name code, the spacecraft name code, the specification part number, the generic part number, manufacturer, and the Federal Supply Class (FSC) number. The record count (number of records selected) shall be displayed with the query result list.

Display of Detailed Part Information

5.1.2.8(i) [86] The system shall enable the user to display "detailed information" for any part selected from the query result list (see requirement [85]) for which this data exists in EPIMS, which shall include all attributes of a part listed in requirement [78].

Display of Detailed Part Manufacturer Information

5.1.2.8(j) [87] The detailed information display capability for parts (see requirement [86]) shall enable the user to display the information from the CAGE directory (see requirement [21]) on the manufacturer (CAGE) for the selected part.

Display of Design Element and System Information

5.1.2.8(k) [88] The detailed information display capability for parts (see requirement [86]) shall enable the user to display detailed information on the design element, to which the part is attached, and its position in the hierarchy of spacecraft, systems, and other design elements on which it is located, including the EPIMS version, date, and contact point for each system or design element on the spacecraft.

Parts List Information Input — General

5.1.2.8(l) [89] The system shall enable a user with the appropriate data access role to enter parts list information on an existing parts list working copy, to create a new parts list working copy, or to create a version from an existing parts list (see the discussion of "version" in this context on page 159). Access to this capability is restricted to the Project Data Administrator (PDA) and Project Users for that project to whom the PDA has given the "Initiate" role.

Parts List Required Information Input

5.1.2.8(m) [90] The parts list working copy creation capability shall first present a user interface (window or screen) into which all required parts list information can be entered. Required parts list information shall include Unique Project Number (UPN), Spacecraft, Element Level 1, Parts List Type (EPPL, ADPL, ABPL, etc.), Parts List Date, and Contact Userid.

Pick List of Relevant Projects

5.1.2.8(n) [91] If the user has "Initiate" access for more than one project, the parts list information input interface shall provide a pick list of the projects for which the user has that access role.

Pick List of Relevant Spacecraft

5.1.2.8(o) [92] The parts list information input interface shall provide a pick list of all spacecraft for which information exists in EPIMS for a project selected from the project pick list (see requirement [91]).

New Spacecraft Input

5.1.2.8(p) [93] The parts list information input interface shall enable the user to enter information for a new spacecraft for a project selected from the project pick list (see requirement [82]). To enter this information, the system shall enable the user to access the NASA Spacecraft and Design Elements Directory maintenance function.

Pick List of Parts List Types

5.1.2.8(q) [94] The parts list information input interface shall provide a pick list of valid parts list types (EPPL, ADPL, ABPL, PAPL, PPL, etc.).

Pick List of Parts List Versions to Use in the Creation of a Working Copy

5.1.2.8(r) [95] The parts list information input interface shall provide a pick list of existing parts list versions in EPIMS for the project, spacecraft, and parts list type selected by the user, and shall enable the user to designate a version to be copied to create a new working copy.

Parts List Working Copy Creation

5.1.2.8(s) [96] The parts list information input interface shall enable a Project Data Administrator for a project or a user with the “Initiate” role for that project to create a new working copy of a selected parts list type for a specified design element defined for that project from a selected working copy or version of a (possibly different) parts list type for a (possibly different) design element defined for that project. The system shall support a single working copy of each parts list type (e.g., EPPL, ADPL, ABPL, etc.) for each design element defined for a project. The parts list information input interface shall provide as default information for the new parts list working copy: the current date as the working copy date and the user’s userid as the contact userid. The system shall enable the user to edit this default information.

Parts List Version Creation

5.1.2.8(t) [97] The parts list information input interface shall enable a Project Data Administrator for a project or a user with the “Initiate” role for that project to create a new parts list version of a selected parts list type for a specified design element defined for that project from a working copy of a (possibly different) selected parts list type for that design element. The parts list information input interface shall provide as default information for the new parts list version: the current date as the version date and the user’s userid as the contact userid. The system shall enable the user to edit this default information.

Part Information Input

5.1.2.8(u) [98] The parts list information input interface shall enable the user to enter the following part information: specification part number, generic part number, manufacturer part number, National Stock Number (NSN), specification number, Federal Supply Class (FSC), part description, standard part flag, manufacturer CAGE code, lot date code, and comments. The system shall enable the user to access the FSC look-up capability to select a valid FSC.

Spacecraft Element Information Input

5.1.2.8(v) [99] The parts list information input interface shall enable the user to enter information on the design element to which a part is directly attached. The parts list information input interface shall provide pick lists of all systems and design elements for which information exists in EPIMS on the selected spacecraft, and shall enable the user to select any design element from these pick lists.

New System or Design Entity Input

5.1.2.8(w) [100] The parts list information input interface shall enable the user to enter information for a new system or design element for the project and spacecraft selected. To enter this information, the system shall enable the user to access the NASA Spacecraft and Design Elements Directory maintenance function.

Part Quantity

5.1.2.8(x) [101] The parts list information input interface shall enable the user to enter the part quantity (defined as the number of parts with the same part number and attribute data attached to a particular spacecraft design element) for EPPL or ADPL. The system shall support serial number and/or reference location information if it is available, but shall enforce data integrity by allowing the user to enter either part quantity or (serial number and/or reference location), but not both — in the latter case, part quantity shall be forced to “1”.

Parts List Line Item Modify

5.1.2.8(y) [102] The system shall enable users with appropriate access roles to modify a parts list line item on a working copy (versioned copies are frozen). This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the “Initiate” role. The parts list modification capability shall enable the user to select a parts list line item for modification by any of the query and information display capabilities specified in requirements [80] through [88].

Parts List Line Item Delete

5.1.2.8(z) [103] The system shall enable users with appropriate access roles to delete a parts list line item on a working copy (versioned copies are frozen). This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The parts list line item deletion capability shall enable the user to select a parts list line item for deletion by any of the query and information display capabilities specified in requirements [80] through [88].

Parts List Release

5.1.2.8(aa) [104] The system shall enable users with appropriate access roles to release a parts list. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Release role. The parts list release capability shall display a list of all parts lists for which the user has one of the roles specified above, giving release access. The list shall contain the project (or UPN), Spacecraft, Element (i.e., the element to which the parts are attached), Parts List Type, and Version for each of the parts lists in the displayed list.

Parts List Report Capability

5.1.2.8(ab) [105] The system shall enable users to generate the following reports on any parts list data that has been selected: a summary report in tabular format, with columns for project, spacecraft, specification part number, generic part number, FSC number, and CAGE code; a detailed report in line-by-line format, containing all supported data elements (see requirement [78]); and a custom report in line-by-line format, for which the user may specify the contents by picking from a list of all supported data elements.

5.1.2.9 Non-Standard Part Approval Requests (NSPAR)

NSPAR Repository

5.1.2.9(a) [106] The system shall provide a repository (storage area) for Non-Standard Part Approval Requests (NSPARs), which shall support, as a minimum, the following attributes: NASA NSPAR Number, NASA NSPAR Number version, contractor NSPAR number, specification part number, generic part number, manufacturer part number, release flag, resubmittal flag, preparation date, NSPAR type (in-house or contractor), contractor CAGE code, subcontractor CAGE code, manufacturer CAGE code, Federal Supply Class (FSC) code, National Stock Number (NSN), specification number, screening specification number, closest standard part number, part description, grade level, selection submittal date, specification submittal date, qualification plan submittal date, qualification test submittal date, NSPAR submittal date, part application comments, part life obsolescence comments, justification for use (text), basis for qualification (text), radiation comments, contact name, reviewer name, selection status code, specification status code and response date, qualification plan status code, qualification test response date, quality assurance status code, quality assurance response date, project status code, project response date, release date, and review comments.

NSPAR Data Access Control

5.1.2.9(b) [107] The system shall implement data access controls for NSPARs. The data access controls shall provide data access in accordance with the Data Access Roles specified by requirement [41].

NSPAR Selection

5.1.2.9(c) [108] The system shall enable the user to select and display a set of NSPARs pertaining to a particular NASA project to which the user has access (as permitted by the user's Data Access Roles and the release status of the NSPARs) by

project, NASA NSPAR number or version letter, FSC, manufacturer CAGE code, specification part number, generic part number, or by any conjunctive (“and”) combination of these attributes. The query interface shall support the use of wildcards in the query specification of NASA NSPAR number, specification part number, and generic part number.

NSPAR Selection by Project

5.1.2.9(d) [109] The NSPAR query interface shall provide the option of selecting NSPARs for a specified project or (by not specifying a project) for all projects. If the user elects to specify a project, the NSPAR query interface shall provide access to the project look-up capability (see requirements [48] through [51]).

NSPAR Selection by Version

5.1.2.9(e) [110] In formulating a query for NSPAR data, if the user specifies a project for which they have access to unreleased data (see Table 1: User Types, beginning on page 50, and Table 2: Data Access Roles, beginning on page 51), the NSPAR query interface shall provide the option of selecting “all versions,” “released versions,” “latest released versions,” or “working versions.” If the user specifies a project for which they do not have access to unreleased data, or if the project is left unspecified (implying all projects), the NSPAR query interface shall provide the option of selecting “all released versions” or “latest released versions” (i.e., only released NSPARs can be selected unless the user specifically has access to unreleased project data).

Query Results Presentation

5.1.2.9(f) [111] The system shall display as a list in tabular format the set of NSPARs resulting from a user query. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a NSPAR query: the NASA NSPAR number and version letter, the project, the specification part number, the generic part number, the manufacturer CAGE code, and the Federal Supply Class (FSC) number. The record count (number of records selected) shall be displayed with the query result list.

Display of Detailed NSPAR Information

5.1.2.9(g) [112] The system shall enable the user to display, for any NSPAR selected from the query result list (see requirement [111]), all attributes listed in requirement [108].

Display of NSPAR Part Manufacturer Information

5.1.2.9(h) [113] The detailed information display capability for NSPARs (see requirement [112]) shall enable the user to display the information contained in the CAGE directory (see requirement [21]) on the manufacturer (CAGE) for the selected part.

NSPAR Add or Modify — General

5.1.2.9(i) [114] The system shall enable a user with the appropriate data access roles (see next sentence) to add or modify a NSPAR for a specified project. Access to this capability is restricted to the Global Data Administrator (GDA), Project Data Administrator (PDA), and Project Users for that project to whom the PDA has given the "Initiate" role (see Table 1: User Types, beginning on page 50, and Table 2: Data Access Roles, beginning on page 51).

NSPAR Required Information Input

5.1.2.9(j) [115] The NSPAR input (add or modify) interface shall require a NASA NSPAR Number, project (UPN), part number (any one of specification part number, generic part number, manufacturer part number, or National Stock Number), Federal Supply Class (FSC) number, CAGE code, NSPAR type (in-house or contractor), NASA contact userid, and preparation date to be entered before the new NSPAR record can be saved (committed as a working copy).

NSPAR Optional Information Input

5.1.2.9(k) [116] The NSPAR input (add or modify) interface shall enable the user to enter the following NSPAR information (optional except as specified in requirement [115]): NASA NSPAR number and version, specification part number, generic part number, manufacturer part number, National Stock Number (NSN), specification number, screening specification number, part description, closest standard part number, manufacturer CAGE code, grade level; submittal and response dates and status codes for the four-step NSPAR procedure (selection, specification, qualification plan, and qualification test) and for the project and quality assurance activities; comments submitted with the NSPAR relative to part application, part life obsolescence, justification for use, basis for qualification, and radiation hardness; and the official NASA review comments on the NSPAR.

Pick List of Relevant Projects

5.1.2.9(l) [117] The NSPAR input (add or modify) interface shall provide a pick list of the projects for which the user has the appropriate access role to create a NSPAR (i.e., projects for which the user either is the Project Data Administrator [PDA] or has been assigned the "Initiate" role by the PDA).

Pick List of NSPAR Types

5.1.2.9(m) [118] The NSPAR input (add or modify) interface shall provide a pick list of valid NSPAR types (in-house or contractor).

NSPAR FSC Look-up

5.1.2.9(n) [119] The NSPAR input (add or modify) interface shall provide access to the FSC look-up capability to select a valid FSC (see requirements [13] through [16]).

NSPAR Add

5.1.2.9(o) [120] The NSPAR input (add or modify) interface shall enable a Project Data Administrator or a user with the Initiate role for a project to create a new NSPAR for the project by entering the required and optional data specified in requirements [115] and [116].

NSPAR Creation by Copying an Existing NSPAR

5.1.2.9(p) [121] The NSPAR input (add or modify) interface shall enable a Project Data Administrator or a user with the Initiate role for a project to create a new NSPAR for the project by changing the NASA NSPAR Number of a working copy (unreleased) of a NSPAR (i.e., if the NASA NSPAR Number is changed, the data shall be added as a new NSPAR, and the working copy from which it was created shall remain unmodified with its original NASA NSPAR Number).

NSPAR Modify

5.1.2.9(q) [122] The system shall enable users with appropriate access roles to modify a working copy of a NSPAR. (Released/versioned NSPAR's are to be frozen, but able to be copied into a new working copy, which can then be modified as necessary and released as a new version of that NSPAR or, by changing the NASA NSPAR Number, as a new NSPAR.) The modify capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The NSPAR modification capability shall enable the user to select a NSPAR working copy for modification by any of the query and information display capabilities specified in requirements [108] through [111].

NSPAR Delete

5.1.2.9(r) [123] The system shall enable users with appropriate access roles to delete a NSPAR. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The NSPAR deletion capability shall enable the user to select a NSPAR for deletion by any of the query and information display capabilities specified in requirements [108] through [111].

NSPAR Release

5.1.2.9(s) [124] The system shall enable users with appropriate access roles to release a NSPAR. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Release role. The NSPAR release capability shall display a list of all NSPARs for which the user has one of the roles specified above, giving release access. The NSPAR release capability shall provide the release history for any NSPAR selected from the displayed list.

NASA NSPAR Number/Version Uniqueness

5.1.2.9(t) [125] The NSPAR release interface shall detect whether the NSPAR number and version combination assigned to a NSPAR to be released already exists within EPIMS; if so, the system shall display a warning to the user and shall not allow the record to be committed until the NSPAR number and version are changed to a combination unique within EPIMS.

NSPAR Resubmit (Copy, Modify, and Release)

5.1.2.9(u) [126] The system shall enable users with appropriate access roles to resubmit a NSPAR by creating a working copy from an existing version, modifying the NSPAR, assigning a new version letter, and releasing the new version. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The NSPAR resubmit capability shall enable the user to select a NSPAR for resubmittal by any of the query and information display capabilities specified in requirements [108] through [111].

NSPAR Report Capability

5.1.2.9(v) [127] The system shall enable users to generate the following reports on any NSPAR data that has been selected: a summary report in tabular format, with columns for NASA NSPAR Number, Version, Status, UPN, Specification Part Number, FSC number, and CAGE code; a detailed report in line-by-line format, containing all supported data elements (see requirement [106]); and a custom report in line-by-line format, for which the user may specify the contents by picking from a list of all supported data elements.

5.1.2.10 NASA Standard Parts List (NSPL, or MIL-STD-975)

NSPL Repository

5.1.2.10(a) [128] The system shall provide a repository (storage area) for the NASA Standard Parts List (NSPL), which shall be capable of storing for each part on the NSPL the Federal Supply Class (FSC), specification number, specification part number, generic part number, special part number (to enable better search and compare capability), grade level, part description, and version reference.

NSPL Data Access

5.1.2.10(b) [129] The system shall allow read-only access to NSPL data for all EPIMS users.

NSPL Version Selection

5.1.2.10(c) [130] The system shall enable the user to select and display a particular NSPL version, or to select all released versions. A pick-list of NSPL versions available in EPIMS shall be provided.

Query Capability

5.1.2.10(d) [131] The NSPL query interface shall enable the user to select standard parts by specification number, specification part number, generic part number, part grade level (1, 2, or 1 & 2), Federal Supply Class (FSC), by text search on any of these fields, or by any conjunctive (“and”) combination of these attributes. The query interface shall support the use of wildcards except for the FSC number, for which wildcards are supported in the look-up subfunction.

FSC Look-up for Query

5.1.2.10(e) [132] The system shall enable the user to access the FSC look-up capability (see requirements [13] through [16]) to look up a valid FSC when making a query by FSC on the NSPL.

Query Results Presentation

5.1.2.10(f) [133] The system shall display as a list in tabular format the set of parts resulting from a user query on the NSPL. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a query: the specification number, the specification part number, the generic part number, the part grade level, and the Federal Supply Class (FSC) number. The record count (number of records selected) shall be displayed with the query result list.

Display of Detailed Part Information

5.1.2.10(g) [134] The system shall enable the user to display, for any part selected from the query result list (see requirement [133]), the following attributes: the specification part number, the generic part number, the FSC number and name, the specification number, the part grade level, and the part description. This will be called the “detailed information.”

NSPL Report Capability

5.1.2.10(h) [135] The system shall enable users to generate the following reports on any NSPL data that has been selected: a summary report in tabular format, with columns for Specification Part Number, Generic Part Number, and FSC Number; a detailed report in line-by-line format, containing all supported data elements (see requirement [128]); and a custom report in line-by-line format, for which the user may specify the contents by picking from a list of all supported data elements.

5.1.2.11 Alert Impact Cross-Reference

The Alert Impact Cross-Reference function compares GIDEP Alerts and other types of problem reports (see Alerts/Advisories/Problem Reports, section 5.1.2.7 on page 56) to parts lists and NSPARs in EPIMS. All parts lists in EPIMS are included in this function:

- Project Parts Lists (EPPL’s, ADPL’s, ABPL’s)
- Project Approved Parts Lists (PAPL’s)
- NASA Standard Parts List (NSPL, or MIL-STD-975

Alert Impact Cross-Reference Repository

5.1.2.11(a) [136] The system shall provide a repository (storage area) for Alert Impact Cross-Reference data, which shall be capable of storing for each matched part the part ID (unique identifier within the parts list), the Unique Project Number (UPN), the Federal Supply Class (FSC) code, the Commercial And Government Entity (CAGE) code for the vendor, the matched part number, the type of part number that was matched (e.g., specification part number, generic part number, manufacturer part number, or National Stock Number), the type of part record that matched (e.g., project parts list, part selection list, NSPAR, or NSPL), and the corresponding data elements for the Alert part: the Alert part FSC code, the Alert part CAGE code, the Alert part number, and the special Alert part number substring (used for matching) in the case of a match on it. The repository shall also store the numeric relative priority of each match (numeric priorities are specified in requirement [138]).

Alert/Part Match Definition

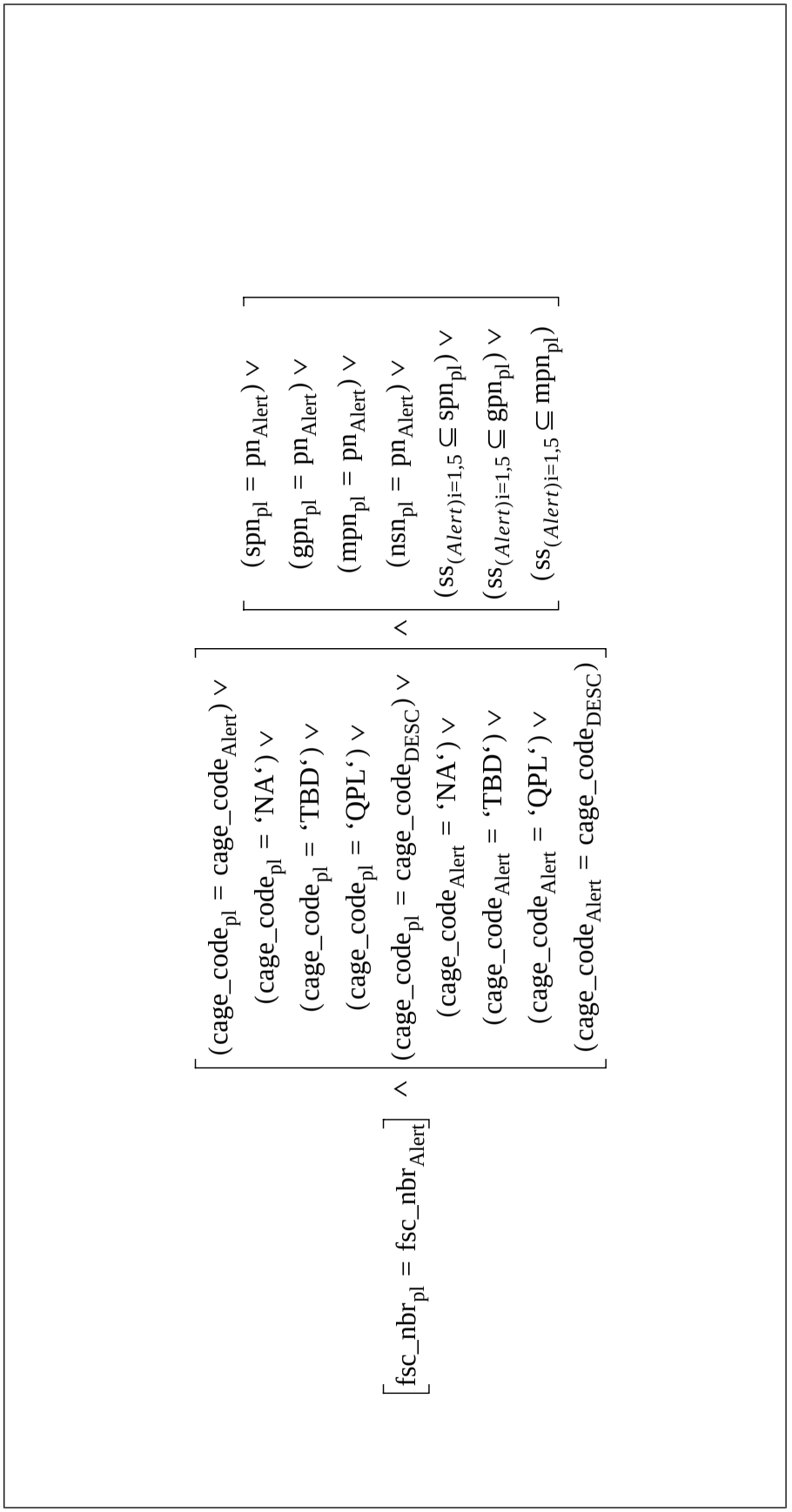
5.1.2.11(b) [137] The system shall populate the Alert Impact Cross-Reference repository with the results of running a cross-referencing algorithm that compares the records of the Alerts/Advisories/Problem Reports repository with all parts list items, NSPAR's, and NASA Standard Parts List (NSPL) records stored in EPIMS. This cross-reference data shall be updated nightly with cross-references to any new Alerts/Advisories/Problem Reports repository, parts list items, NSPARs, or NSPL records. The cross-referencing algorithm shall implement the formal definition of a match or "hit" between an Alert (any GIDEP Failure Experience Data Interchange [FEDI] record, NASA Advisory, or other problem report stored in the EPIMS Alert/Advisory/Problem Report repository) and a part on a parts list as shown in Figure 5: Formal Specification of Alert Impact Cross-Reference Match Condition, on page 72.

In Figure 5: Formal Specification of Alert Impact Cross-Reference Match Condition and Table 3: Alert/Part Match Prioritization,

- Alert (in subscript) indicates that the data element is an attribute of the Alert, Advisory, or Problem Report record.
- fsc_nbr = Federal Supply Classification number
- cage_code = Commercial And Government Entity (CAGE) code (a.k.a. H4/H8 code)
- $\text{cage_code}_{\text{DESC}}$ = one of the CAGE codes assigned to the Defense Electronics Supply Center (DESC)
- gpn = generic part number
- mpn = manufacturer's part number
- nsn = National Stock Number
- pn = part number
- pl in subscript indicates that the data element is an attribute of a part from a parts list
- spn = specification part number

- $ss_{(Alert)i=1,5}$ represents the five possible special “substrings” used as aliases for the Alert part number in the matching process.
- “$\subseteq$” means “is contained in” (e.g., “2N2222” $\subseteq$ “JANTXV2N2222A”);
- “$\wedge$” means “and”;
- “$\vee$” means “or”.

Figure 5: Formal Specification of Alert Impact Cross-Reference Match Condition



Alert/Part Match Prioritization

5.1.2.11(c) [138] For each Alert and parts list line item pair, the Alert Impact Cross-Reference repository shall contain at most one record of a match or "hit" — this is both for clarity and for economy of storage, since it is quite likely that when a pair matches on one set of part numbers, they will also match on other aliases (e.g., generic part numbers). This requirement specifies the order of priority for the several possible match conditions. The priorities are specified in Table 3: Alert/Part Match Prioritization, on page 73.

Table 3: Alert/Part Match Prioritization

Alert/Part Match Condition	Priority
$pn_{Alert} = spn_{pl}$ [exact match on specification part number]	1
$pn_{Alert} = gpn_{pl}$ [exact match on generic part number]	2
$pn_{Alert} = mpn_{pl}$ [exact match on manufacturer's part number]	3
$pn_{Alert} = nsn_{pl}$ [exact match on National Stock Number]	4
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)1} \subseteq spn$	5
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)2} \subseteq spn$	6
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)3} \subseteq spn$	7
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)4} \subseteq spn$	8
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)5} \subseteq spn$	9
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)1} \subseteq gpn$	10
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)2} \subseteq gpn$	11
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)3} \subseteq gpn$	12
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)4} \subseteq gpn$	13
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)5} \subseteq gpn$	14
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)1} \subseteq mpn$	15
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)2} \subseteq mpn$	16
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)3} \subseteq mpn$	17
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)4} \subseteq mpn$	18
$CAGE_{pl} = CAGE_{Alert}$ and $ss_{(Alert)5} \subseteq mpn$	19
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)1} \subseteq spn$	20
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)2} \subseteq spn$	21
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)3} \subseteq spn$	22

Table 3: Alert/Part Match Prioritization (Continued)

Alert/Part Match Condition	Priority
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)4} \subseteq$ spn	23
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)5} \subseteq$ spn	24
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)1} \subseteq$ gpn	25
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)2} \subseteq$ gpn	26
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)3} \subseteq$ gpn	27
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)4} \subseteq$ gpn	28
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)5} \subseteq$ gpn	29
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)1} \subseteq$ mpn	30
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)2} \subseteq$ mpn	31
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)3} \subseteq$ mpn	32
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)4} \subseteq$ mpn	33
$CAGE_{Alert}$ = (TBD, N/A, QPL, or DESC CAGE) and $ss_{(Alert)5} \subseteq$ mpn	34

Automatic Maintenance of Cross-Reference Integrity: Parts List or NSPAR Additions, Modifications, and Deletions

5.1.2.11(d) [139] The system shall automatically run the Alert Impact Cross-Reference algorithm against any bulk-loaded parts lists or NSPARs and against any parts list, NSPL, or NSPAR record additions. The system shall automatically adjust cross-reference data as necessary when parts list or NSPAR records are modified or deleted, so that new data is cross-referenced and data that has been removed by changes or deletions is no longer cross-referenced.

Automatic Maintenance of Cross-Reference Integrity: Alert, Advisory, and Problem Report Additions, Modifications, and Deletions

5.1.2.11(e) [140] The system shall automatically run the Alert Impact Cross-Reference algorithm against any bulk-loaded Alerts, Advisories, or Problem Reports and against any Alert, Advisory, or Problem Report record additions. The system shall automatically adjust cross-reference data as necessary when Alerts, Advisories, or Problem Reports are modified or deleted, so that new data is cross-referenced and the cross-reference data that has been removed by changes or deletions (which shall be referred to as “superseded”) is maintained separately, but is accessible (for traceability purposes) by specifically selecting the “superseded” data, by the same query methods as the good data.

Automatic Notification of Hits

5.1.2.11(f) [141] The system shall present a warning to the Project Data Administrator (PDA) for any project that owns a parts list for which there are hits in the Alert Impact Cross Reference repository that have not received dispositions (see requirement [149]). This warning shall be an on-line message that appears when the PDA logs on to EPIMS.

Query Capability and Data Access Control

5.1.2.11(g) [142] The system shall enable the user to select Alert Impact Cross Reference records by Alert Number, part number, FSC number, CAGE code, project, or spacecraft design element, also enabling the use of “wildcards” in any of these selection criteria (except FSC number and CAGE code, for which wildcards are supported in the look-up subfunction); or by “Alert Code” — e.g., Alert, Safe-Alert, and other types as specified in requirement [64], NASA Advisories, and Problem Reports; or by Issue Date as before, after, or equal to a given date or between two specified dates. The system shall enable the user to select records by any conjunctive (“and”) combination of the search parameters listed above. The system shall enable the user to clear all search criteria in preparation for entering a new query. The Alert Impact Cross Reference query interface shall restrict user access by project as follows: the user can specify in a query (1) all projects to which the user has read access to unreleased data, or (2) a specified project to which the user has read access to unreleased data. I.e., the system shall give the user access to Alert Impact Cross-Reference data only for projects to which the user has been granted explicit read access to unreleased project data. The user will not have access to Alert Impact Cross-Reference data for projects to which the user does not have read access, even for released parts lists and NSPARs of those projects. The purpose of this restriction is to protect the sensitivity of GIDEP data and the project’s dispositioning of Alert Impacts.

Project Look-up for Query

5.1.2.11(h) [143] If the user elects to specify a project (subject to the restrictions of requirement [142]), the Alert Impact Cross-Reference query interface shall provide access to the project look-up capability (see requirements [48] through [51]).

FSC Look-up for Query

5.1.2.11(i) [144] The Alert Impact Cross Reference query interface shall enable the user to access the FSC look-up capability to select a valid FSC (see requirements [13] through [16]).

Spacecraft and Design Elements Look-up for Query

5.1.2.11(j) [145] The Alert Impact Cross Reference query interface shall enable the user to access the NASA Spacecraft and Design Elements look-up capability (see requirements [59] through [51]) to select a valid spacecraft or design element for incorporation into a query.

Query Results Presentation

5.1.2.11(k) [146] The system shall display as a list in tabular format the set of records resulting from a user query on the Alert Impact Cross Reference. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a query: the Alert Number, the Alert part number, the matched record type (parts list, NSPAR, or NSPL), the project, the Federal Supply Class (FSC) number, and the entity's matched part number. The record count (number of records selected) shall be displayed with the query result list.

Alert Detailed Information Display

5.1.2.11(l) [147] The Alert Impact Cross Reference query interface shall provide the capability to display detailed information on the Alert, Advisory, or Problem Report for a selected record in the query results. Access will be given to all detailed data, as specified in requirement [64]. This access should provide the same functionality as the Alert, Advisory, or Problem Report function itself, except that it will give access only to the record selected in the Alert Impact Cross Reference query results display window.

Parts List Detailed Information Display

5.1.2.11(m) [148] The Alert Impact Cross Reference query interface shall provide the capability to display detailed information on the matched part for a record selected inside the query results display. If the selected part is a part from a project parts list, the detailed information shall include all attributes specified in requirement [86]. If the selected part is from a NSPAR, the detailed information shall include all attributes specified and referenced in requirement [112]. If the selected part is from the NASA Standard Parts List, the detailed information shall include all attributes specified in requirement [134].

Disposition of Alert Impacts

5.1.2.11(n) [149] The Alert Impact Cross Reference function shall provide the capability to attach a disposition to one or more Alert Impact Cross Reference records. A disposition shall be accessible only to project users or other users who have been given access to unreleased project data. A disposition shall consist of a comment (text) and a disposition code or "synopsis". The system shall provide the capability to display the disposition for any selected Alert Impact Cross Reference record. The system shall enable the user with access to project data to create a report on any single selected disposition.

"Release" of Alert Impact Dispositions

5.1.2.11(o) [150] The system shall provide the capability for the Project Data Administrator (PDA) to "release" Alert Impact Dispositions to the NASA Center GIDEP Alert Coordinator. Note that this "release" will provide access only to the NASA Center Alert Coordinator — the dispositions will never be released outside of the NASA project (but can be made accessible to users outside the project by the PDA specifically granting to particular users read access to project data).

Alert Impact Cross-Reference Report Capability

5.1.2.11(p) [151] The system shall enable users to generate the following reports on any Alert Impact Cross-Reference data that has been selected: a summary report in line-by-line format, containing for each matched item selected: for the matched Alert, the Alert Number, Match Code, Alert Part Number, FSC Number, and CAGE Code; for the matched item, parts list information (if applicable, including the UPN, project name code, spacecraft name code, lowest element name code, parts list type, and parts list version) and part information (including the functional area [parts list, NSPAR, or NSPL], part number, part number type [generic, specification, manufacturer, etc.], FSC number, and CAGE code).

5.1.2.12 Parts Lists Comparison

Selection of Parts Lists to Be Compared

5.1.2.12(a) [152] The system shall enable the user to select for comparison any two parts lists from among the released or unreleased parts lists to which the user has access in EPIMS. The system shall offer the option of selecting a specific version of the NASA Standard Parts List (NSPL) from among the versions available in EPIMS. The system shall enable the user to select a project parts list by project, spacecraft, parts list type (Early Potential, As-Designed, As-Built), and parts list version. The system shall enable the user to select a project-approved parts list by project and version. The system shall then compare the Federal Supply Classes (FSC) of the parts in the parts lists selected, identify the common FSC's, and enable the user to select all or any subset of the common FSC's to include in the parts list comparison.

Parts List Comparison Logic: Two Project Parts Lists or Project-Approved Parts Lists

5.1.2.12(b) [153] The Parts List Comparison function shall compare project parts lists and project-approved parts lists according to the logic shown in Figure 6: Project Parts List and Project-Approved Parts List Comparison Match Condition, on page 78.

In Figure 6:

- fsc = Federal Supply Class
- gpn = generic part number
- spn = specification part number
- mpn = manufacturer's part number
- nsn = National Stock Number
- pl1 in subscript means "attribute of first parts list in the comparison"
- pl2 in subscript means "attribute of second parts list in the comparison"
- "$\subseteq$" means "is contained in" (e.g., "2N2222" $\subseteq$ "JANTXV2N2222A");
- "$\wedge$" means "and"; "$\vee$" means "or".

.

Figure 6: Project Parts List and Project-Approved Parts List Comparison Match Condition

$$(\text{fsc_nbr}_{pl2} = \text{fsc_nbr}_{pl1}) \wedge \left[\begin{array}{l} (\text{spn}_{pl2} = \text{spn}_{pl1}) \vee \\ (\text{nsn}_{pl2} = \text{nsn}_{pl1}) \vee \\ (\text{gpn}_{pl2} \subseteq \text{gpn}_{pl1}) \vee \\ (\text{gpn}_{pl1} \subseteq \text{gpn}_{pl2}) \vee \\ (\text{gpn}_{pl2} \subseteq \text{spn}_{pl1}) \vee \\ (\text{gpn}_{pl1} \subseteq \text{spn}_{pl2}) \vee \\ (\text{gpn}_{pl2} \subseteq \text{mpn}_{pl1}) \vee \\ (\text{gpn}_{pl1} \subseteq \text{mpn}_{pl2}) \vee \\ (\text{mpn}_{pl2} \subseteq \text{mpn}_{pl1}) \vee \\ (\text{mpn}_{pl1} \subseteq \text{mpn}_{pl2}) \vee \\ (\text{mpn}_{pl2} \subseteq \text{spn}_{pl1}) \vee \\ (\text{mpn}_{pl1} \subseteq \text{spn}_{pl2}) \end{array}\right]$$

Parts List Comparison Logic: A Project Parts List or a Project-Approved Parts List vs. the NSPL

5.1.2.12(c) [154] The Parts List Comparison function shall compare project parts lists and project-approved parts lists to the NASA Standard Parts List (NSPL) according to the logic shown in Figure 6: Project Parts List and Project-Approved Parts List Comparison Match Condition, on page 78.

In Figure 6:

- fsc = Federal Supply Class
- gpn = generic part number
- spn = specification part number
- mpn = manufacturer's part number
- nsn = National Stock Number
- NSPL = NASA Standard Parts List
- ss_{NSPL} represents the special "substrings" used as aliases for the NSPL part number in the matching process.

- pl = project parts list or project-approved parts list
- "⊆" means "is contained in" (e.g., "2N2222" ⊆ "JANTXV2N2222A");
- "∧" means "and"; "∨" means "or".

Figure 7: NASA Standard Parts List Comparison Match Condition

$$(\text{fsc_nbr}_{pl} = \text{fsc_nbr}_{NSPL}) \wedge \left[\begin{array}{c} (\text{spn}_{pl} = \text{spn}_{NSPL}) \vee \\ (\text{gpn}_{pl} \subseteq \text{gpn}_{NSPL}) \vee \\ (\text{gpn}_{NSPL} \subseteq \text{gpn}_{pl}) \vee \\ (\text{gpn}_{pl} \subseteq \text{spn}_{NSPL}) \vee \\ (\text{gpn}_{NSPL} \subseteq \text{spn}_{pl}) \vee \\ (\text{gpn}_{pl} \subseteq \text{ss}_{NSPL}) \vee \\ (\text{ss}_{NSPL} \subseteq \text{gpn}_{pl}) \vee \\ (\text{ss}_{NSPL} \subseteq \text{mpn}_{pl}) \vee \\ (\text{ss}_{NSPL} \subseteq \text{spn}_{pl}) \end{array}\right]$$

Parts List Comparison Results Display — Matched Parts

5.1.2.12(d) [155] The Parts List Comparison function shall display the results of the parts list comparison in two tabular formats: one for the display of matched parts and one for the display of unmatched parts. The matched parts shall be displayed with the following columns combined into a single table: for parts list #1 — part id (unique id number of the part in parts list #1, to enable identification of separate records with the same part number), part number, part number type (generic, specification, manufacturer, or National Stock Number [NSN]), CAGE code, and Federal Supply Class (FSC); for the corresponding matched parts in parts list #2 — exactly the same columns, with the exception of FSC, which is required by the matching logic to be identical to that of the part from parts list #1. In addition, the parts list types and total record counts for parts lists 1 & 2 shall be displayed, along with the total number of matched parts.

Parts List Comparison Results Display — Unmatched Parts

5.1.2.12(e) [156] The Parts List Comparison function shall display the unmatched parts from either parts list in the following columns: part id, generic part number, specification part number, manufacturer part number, CAGE code, and FSC code. The system shall enable the user to toggle between display of unmatched parts from either parts list.

Parts List Comparison Results Display — Detailed Information

5.1.2.12(f) [157] The Parts List Comparison function shall provide the option to display detailed information on any record selected from the tabular display. For parts lists, the detailed information will be identical to that required for parts lists (see requirement [86]). For the NSPL and project-approved parts lists, the detailed information will be identical to that required for the NSPL (see requirement [134]).

Parts List Comparison Results Report

5.1.2.12(g) [158] The Parts List Comparison function shall provide the capability to generate a report with the same information as is displayed on the screen as the result of a parts list comparison (see requirements [156] and [157]).

Parts List Comparison — Recomparing on Other FSC's

5.1.2.12(h) [159] The Parts List Comparison function shall return to the parts list selection window after the results window is closed, and shall provide the option to select a different FSC or set of FSC's on which to compare the selected parts lists, or even to replace one or both of the currently selected parts lists with new selections.

5.1.2.13 Technical Documents and News

Technical News and Technical Document Archives

5.1.2.13(a) [160] The system shall provide access to a "Technical Archive" consisting of technical articles, papers, reports, and publications, and will support identification of the articles by title and parent publication in a scrollable pick list.

Presentation of a Technical Article

5.1.2.13(b) [161] The Technical Archives function shall display any technical document selected from the scrollable pick list in a scrollable text window.

String Search

5.1.2.13(c) [162] The Technical Archives function shall enable the user to retrieve all technical documents containing a user-specified text (string of characters). When the user displays a document selected from the result table of a string search, the first occurrence of the string shall be highlighted.

Recursive String Search

5.1.2.13(d) [163] The Technical Archives function string-search (see requirement [162]) shall be capable of recursive searches — i.e., the function shall be capable of searching the solution set of a previous search for another character string, and displaying the new solution set. The Technical Archives function shall present any sub-selected list of technical documents in a scrollable pick list.

Selection and Retrieval of Technical Articles

5.1.2.13(e) [164] The Technical Archives function shall enable the user to retrieve all technical documents before, after, or on a given date or between two specified dates, and shall enable the user to restrict the selected documents to those of a specified parent publication, and shall provide a pick list of the parent publications available.

Save-to-FIle Capability

5.1.2.13(f) [165] The Technical Archives function shall enable the user to save the text of any selected document to a file.

Print Capability

5.1.2.13(g) [166] The Technical Archives function shall enable the user to print the text of any selected document.

5.1.3 Candidate EPIMS Functional Requirements

Note: The items in this section are not baseline requirements, and are not to be implemented in EPIMS 1.0.

These candidate functional requirements are requirements that have been identified from user input, but have not yet been fully coordinated with all NASA centers nor ratified by the NASA Parts Steering Committee. They are recorded here for information purposes only, and are not part of the current baseline EPIMS requirements.

5.1.3.1 Help

5.1.3.1(a) Hypertext navigation of help topics.

5.1.3.2 FSC Directory

No new candidate requirements have been identified at present.

5.1.3.3 CAGE Directory

No new candidate requirements have been identified at present.

5.1.3.4 User Directory

5.1.3.4(a) Additional User Types in order to support prime and subtier contractors being granted access to EPIMS. See the table on the next page for a possible definition of a Contractor User.

Table 4: User Types (Candidate Requirements)

User Type	Assigned by	Assigns Roles and User Types	Notes
Contractor User	• PDA, • LSA, or • GDA	[none]	• The Contractor User user type is assigned by the PDA, LSA, or GDA, and is specific to a particular Project. • Contractor Users have read access to all unreleased project data for the projects to which they are granted access.

5.1.3.5 NASA Project Directory

No new candidate requirements have been identified at present.

5.1.3.6 NASA Spacecraft and Design Elements Directory

No new candidate requirements have been identified at present.

5.1.3.7 Alerts/Advisories/Problem Reports

User Selection of Alert/Advisory/Problem Report Types to be Cross-Referenced to Project Data

5.1.3.7(a) Concept: This is a relatively small modification to the Alert Impact Cross-Reference, the concept of which is to enable the Project Data Administrator (PDA) to specify whether to include certain types of records in the Alert Impact Cross-Reference for parts lists on the specific project for which they are the PDA. The Alert Impact Cross-Reference automatically compares any new parts list or parts list line item to all records in the Alert/Advisory/ Problem Report repository and saves any matches found in a cross-reference table. The types of records in the Alert/Advisory/ Problem Reports repository are:

- GIDEP Alert
- GIDEP Problem Advisory
- GIDEP Safe Alert
- GIDEP Diminishing Manufacturing Sources
- GIDEP Product Change Notice
- GIDEP Agency Action Notice
- NASA Part Advisory
- NASA Center Problem Report [new]

Of these types, some are particularly urgent for cross-referencing to all project parts lists (such as GIDEP Alerts and NASA Advisories) and some are not important for all projects (such as Diminishing Manufacturing Sources, which are not important for one-time builds, as many NASA projects are).

The proposed modification would allow the PDA to specify which of the non-urgent record types would be included in the automatic comparison. The record types for which cross-referencing is required would not be among the choices offered to the PDA for exclusion from cross-referencing - suggestions for required cross-reference types are as follows (please submit your comments on this — if you disagree, please specify your preferred list!):

- GIDEP Alert
- GIDEP Problem Advisory
- GIDEP Safe Alert
- NASA Part Advisory

- NASA Center Problem Report [new]

Record types suggested as optional are:

- GIDEP Diminishing Manufacturing Sources
- GIDEP Product Change Notice
- GIDEP Agency Action Notice

Justification:

a. avoids overburdening the compute-intensive cross-reference process with non-essential operations, thus enabling a significant increase in the speed of the comparison process

b. removes useless information from the cross-reference table, thus allowing the parts engineer to focus on only the most meaningful cross-references - those on which impact assessments must be provided in the closed-loop Alert process.

Create and Maintain Problem Report Data

5.1.3.7(b) The system shall enable the NASA Project User to create and maintain Problem Report data in a form similar to GIDEP Alerts and NASA Advisories;

Release Problem Report Data

5.1.3.7(c) The system shall enable the NASA Project User to release Problem Report data to read-only access of all NASA users of EPIMS.

Registration of EPIMS Users of GIDEP Data

5.1.3.7(d) The names of all users of the EPIMS system will be submitted to GIDEP for registration as GIDEP users. This information will be kept current as users are added to EPIMS.

Specific Access Restrictions on GIDEP Data

5.1.3.7(e) Access to GIDEP data within the EPIMS system will be restricted to U.S. citizens only, with the following exceptions:

a. Canadian citizens shall have the same access privileges as U.S. citizens.

b. NASDA (Japanese) Space Station Freedom International Partner activities shall have access to GIDEP Failure Experience Data Interchange records that have been identified as matches to parts on a NASDA parts list that is being maintained in EPIMS.

Notification to Users of GIDEP Data Sensitivity

5.1.3.7(f) EPIMS users accessing GIDEP data will be reminded by a pop-up window that GIDEP data is to be treated as *sensitive, non-classified data* for authorized users eyes only, not to be released to unauthorized personnel, the public, and most especially not to the media.

5.1.3.8 Parts Lists

Capture of Parts Lists from CAD/CAM Applications

5.1.3.8(a) The system shall provied the capability to capture parts lists from CAD/CAM applications in the engineering environment, either by filtering of saved files or by the use of a shared repository.

Concept: Most electronic designs today are done using CAD tools for various aspects of circuit design, simulation, and layout. The CAD representation of the design contains the parts list information for the design, and this information is embedded in the saved CAD file. The industry-wide standard for CAD data exchange is the Initial Graphics Exchange Specification (IGES), which is also a Computer-Aided Acquisition and Logistics Support (CALS) standard (MIL-D-28000) and an ANSI standard (ANSI Y14.26M). Most CAD applications have the capability to save their output to an IGES file, as well as to import data from another application via IGES.

[The standard which will succeed IGES in the near future is the Standard for the Exchange of Product Model Data (STEP) -- ISO 10303. There are Public Domain tools available from the National Institute of Standards and Technologies (NIST) which can analyze, parse, and even edit the contents of a STEP Physical File, so data import from this standard CAD file format will be quite straightforward.]

A possible implementation of this capability would be to parse the IGES file, which contains parts information in a standard, labeled format, create a parts list data file in a standard format, and upload that file into the EPIMS project parts list repository.

This capability has been suggested as a high priority by George Kramer, Parts Branch Head at GSFC.

Justification:

a. saves time, cuts cost, avoids errors, and increases data integrity by eliminating the duplicate entry of parts list data, which is presently entered manually into EPIMS or captured from a contractor's ASCII file that must be prepared by the contractor at additional expense to NASA. NASA can benefit significantly here be exploiting the existing standards for the representation and exchange of product data.

b. enables tighter coupling of the parts quality assurance and procurement activity with the design activity. If parts list information can be captured automatically at any point in the design process, this enables the parts engineer and designer to exchange information in real-time relative to part selection, qualification, approval, and procurement.

Bill-of-Materials generation from project parts list

Concept: The baseline EPIMS Project Parts List function will enable the Project or Contractor User to enter a project parts list for a spacecraft with full information as to the location of parts within the spacecraft - i.e., system, subsystem, assembly, board, etc. (these will be referred to as the “design elements” of the spacecraft). In other words, the parts list for a given spacecraft will be the union of the parts lists for all the design

elements of the spacecraft. This presents the parts engineer with the task of generating a Bill-of-Materials for the spacecraft, a Bill-of-Materials being the list containing each part type and quantity to be procured for the entire spacecraft. The capability suggested would make this calculation, based upon combining the part types from each design element parts list within the spacecraft.

The capability to calculate Bill-of-Materials data can used at any level of assembly, from simple assemblies up to the spacecraft and even across projects, so that parts usage can be calculated at any level within a spacecraft or across all projects to show NASA usage.

This capability was requested by Bryan Fafaul, a Project Parts Engineer at GSFC.

Justification:

a. aids the project parts engineer in the procurement planning process for NASA in-house builds, and in verification of parts usage requirements for contractor builds;

b. provides an initial capability for preparing NASA parts usage statistics and cost data, which will aid greatly in part standardization management and in the overall strategic planning of the NASA parts program.

5.1.3.9 Non-Standard Part Approval Requests (NSPAR)

No new candidate requirements have been identified at present.

5.1.3.10 NASA Standard Parts List (NSPL, or MIL-STD-975)

Nomination System for MIL-STD-975 Candidate Parts

5.1.3.10(a) Concept: The capability to nominate and obtain the status of candidate parts for MIL-STD-975 has been functionally defined and was, in fact, implemented in the EPIMS 2.0 system on TMIS. The concept of this capability is:

- to enable Contractor and Project Users to "nominate" parts for standardization (inclusion in MIL-STD-975) by simply entering information about the part into EPIMS, from which the NPPO can then easily compile a list of candidate parts directly from NASA user inputs.
- to enable all users to query the candidate and nominee parts repository to determine the standardization status of any part that has been nominated.

The information to be entered for a part nomination would include:

- part number
- description
- test history (optional)
- NASA usage
- evidence of technical maturity
- evaluation test summary (optional)
- application information (optional)

- requestor's name and project
- date entered.

Any part entered as a nomination by a Contractor or Project User is considered a “nominee part” for standardization. The NPPO would use the list of nominee parts in selecting parts to be standardized. A part selected by the NPPO to begin the standardization process is a “candidate part.”

Information on all nominee and candidate parts would be immediately accessible to all EPIMS users through a query function, which would enable the user to query by

- part number
- description
- requestor's name and project
- date entered

Justification:

a. minimizes the effort required for a user to nominate a part for standardization, thus saving time for the user, streamlining the standardization process, and helping to make MIL-STD-975 more sensitive to user needs;

b. makes information on part qualification and standardization activities readily available, thus avoiding duplication of these activities and saving time in part selection and in the preparation of NSPAR's.

Notes for MIL-STD-975

5.1.3.10(b) Concept: The MIL-STD-975 has footnotes that apply to various functional groups of parts, families of parts, parts with a given range of values for a parameter, etc. These footnotes are essential to the meaning and use of MIL-STD-975, but have not yet been implemented in the EPIMS MIL-STD-975 function. This capability would enable the NPPO to maintain the information contained in these notes in EPIMS so that when a part has been selected, the EPIMS user can see that the part has a note or notes attached to it and can read the note contents.

Justification:

This capability makes the MIL-STD-975 usable as an on-line document, without reference to the hard copy (currently the user must consult the hard copy for the content of notes). This is especially effective in conjunction with the cross-reference function whereby any parts list in EPIMS can be compared to MIL-STD-975 to help identify standard parts and parts for which a standard part replacement may exist (this cross-reference function will be part of the EPIMS baseline release).

5.1.3.11 Alert Impact Cross-Reference

Alert Impact Cross-Reference Reports

5.1.3.11(a) The Alert Impact Cross-Reference function shall provide the capability to display or print:

1. *Detailed Hit Report* showing the matched data elements and the details of both the part and the Alert/Advisory/Warning/Notice
2. *Summary Hit Report* listing the parts and their corresponding Alert/Advisory/ Warning/Notice.

5.1.3.12 Parts List Comparison

No new candidate requirements have been identified at present.

5.1.3.13 Technical Documents and News

Technical News and Technical Document Archives

5.1.3.13(a) When engineering report data has been newly introduced into the system, a title or label indicating the subject matter of the data shall be displayed in the "News" window on the Main Menu for a period of one month. At the end of the month, the item will remain visible and accessible as part of the Technical Document Archive , but will no longer be shown in the "News" window.

Enhanced Technical Document Archive

This function will serve as a engineering document resource for NASA users to access, and will provide a view of *all* textual data in EPIMS.

Textual Data Repository

5.1.3.13(b) The system shall provide a repository function that enables users to access the following textual information:

1. News items
2. User Technical Interchange Forum (Lessons Learned) items
3. GIDEP Alerts, Safe-Alerts, Problem Advisories, Product Change Notices
4. NASA Advisories
5. Problem Reports
6. Failure Analyses, Destructive Physical Analyses, Evaluation Reports
7. GIDEP Engineering Reports
8. MIL-HDBK-978 application notes .

Textual Data Repository: Archiving

5.1.3.13(c) When free-form textual (e.g., engineering report) data has been newly stored in the system, a title or label indicating the subject matter of the data shall be displayed in the "News" window on the Main Menu for a period of one month. At the end of the month, the item will remain visible and accessible as part of a Technical Document Archive, but will no longer be shown in the "News" window (since it will no longer be "news").

5.1.3.14 Part List Review

Concept: This capability would enable the user to select and display a project parts list to be reviewed for a particular NASA project, spacecraft, or Design Element to which the user has access (as determined by the user's Data Access Roles). The function would enable the user to

- display for review the information in the Alert Impact Cross-Reference and NSPAR functions
- provide options to compare the subject part list to the MIL-STD-975 (to identify standard parts) and to any relevant Part Selection Lists, such as Project-Approved Parts Lists, PPL's, etc. (to identify approved parts)
- provide options to compare the subject parts list to the records in the EPIMS repository for test and field reliability data (including incoming test and inspection data, Failure Analysis reports, Destructive Physical Analysis reports, part evaluation test data, and related reliability data).
- maintain status and comments on each item of the subject parts list.
- issue a hard copy report of the parts list review.

Justification:

a. enhances the productivity of the project parts engineer — he receives automated assistance in the time-consuming and repetitive task of comparing and extracting data from parts lists being reviewed; the project part engineer can then focus on the content of the essential comments to accompany the report.

b. saves time in the project-contractor communications loop, as the project parts engineer can issue parts list review reports quickly and in a format containing the standard information required for these communications. The project-contractor communications loop is often a critical path activity, and represents costs to the project.

Project Parts List Review Repository

5.1.3.14(a) The system shall provide a repository (storage area) for project parts list reviews. This repository shall support, as a minimum, the data elements specified in the Parts List Review Schema (see ***).

Project Parts List Review Data Access Control

5.1.3.14(b) The system shall implement data access controls for project parts list reviews. The data access controls shall provide data access in accordance with the Data Access Roles specified by requirement [xx].

Project Parts List Review Query Capability

5.1.3.14(c) The system shall enable the user to select and display a project parts list review pertaining to a particular NASA project, spacecraft, or Design Element to which the user has access (as permitted by the user's Data Access Roles and the release status of the project parts list review) by parts list type, version, and identifier; by UPN, spacecraft name, name code, or number, and by the name, name code, or id number of any Design Element for which that information has been entered into EPIMS, or by any conjunctive ("and") combination of these attributes. If the parts list review specified by the user has more than one version, the query capability shall enable the user to specify a version, or to select "all released versions."

Project Parts List Review UPN Look-up

5.1.3.14(d) The project parts list review query interface shall provide access to the UPN look-up capability (see requirements [xx] through [yy]) to select a valid UPN for incorporation into a query.

Project Parts List Review Query Capability Spacecraft and Design Elements Look-up

5.1.3.14(e) The project parts list review query interface shall provide access to the NASA Spacecraft and Design Elements look-up capability (see requirements [xx] through [yy]) to select a valid spacecraft or Design Element for incorporation into a query.

Project Parts List Review Query Results Display

5.1.3.14(f) The system shall display as a list in tabular format the set of records resulting from a user query on project parts list reviews. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a query: the Specification Part Number, the manufacturer name (or a reference to manufacturer information, if that is found on a NSPAR or QPL, e.g. — this column to be designated "Manufacturer Information"), the Recommended Part Number, Part Status, NSPAR Number, references to applicable Alert/Advisory/Problem Report information (column to be designated "Alerts"), and references to applicable review notes (column to be designated "Notes").

Project Parts List Review Detail Display

5.1.3.14(g) The system shall enable the user to select for display any combination of three detail windows for information relative to a record selected in the query results table for project parts list reviews: NSPAR Information, Alerts Information, and Notes.

Project Parts List Review Access to NSPAR Data

5.1.3.14(h) The NSPAR Information detail window for project parts list reviews shall access the NSPAR function to display all information (as specified in the NSPAR Detail requirements — see items ***) relative to the NSPAR associated with the selected project parts list review record.

Project Parts List Review Access to Alert Impact Cross-Reference Data

5.1.3.14(i) The Alerts Information detail window for project parts list reviews shall access the Alert Impact Cross-Reference function to display all information (as specified in the Alert Impact Cross-Reference Detail requirements — see item ***) relative to all Alerts, Advisories, and Problem Reports which have been cross-referenced to the selected project parts list review record.

Project Parts List Review Access to Parts List Compare Functions

5.1.3.14(j) The system shall provide options to compare the subject part list to the MIL-STD-975 (to identify standard parts) and to any relevant Part Selection Lists, such as Project-Approved Parts Lists, PPL's, etc. (to identify approved parts)

Project Parts List Review Access to Test and Field Reliability Data

5.1.3.14(k) The system shall provide options to compare the subject parts list to the records in the EPIMS repository for test and field reliability data (including incoming test and inspection data, Failure Analysis reports, Destructive Physical Analysis reports, part evaluation test data, and related reliability data).

Project Parts List Review Notes Data Support

5.1.3.14(l) The following types of input by the reviewer shall be supported by the project parts list review function: notes, recommended part numbers, status of the parts list line item.

Project Parts List Review Notes Display

5.1.3.14(m) The Notes detail window for project parts list reviews shall display all information entered as notes for the selected project parts list review record by reviewers (see item [xx]).

Project Parts List Review Report Capability

5.1.3.14(n) The system shall provide the capability to issue a hard copy report of the parts list review.

5.1.3.15 Qualified Manufacturers Lists/Qualified Products Lists (QML/QPL) and Manufacturer Surveys

Concept: This capability will support data from manufacturer surveys done by NASA and its contractors, creating a repository for the survey results so that parts engineers have ready access to information on qualified sources and on sources for which problems exist. The same repository will support electronic access to military Qualified Products Lists (QPL) and Qualified Manufacturers Lists (QML), which have the same semantic content as survey results: the cross-referencing of parts to qualified sources.

The capability developed for the NASA Mechanical Parts Information Management System (MePIMS) to support the capture of data from the National Aerospace and Defense Contractors Auditing Program (NADCAP) was designed to be readily adaptable to support the corresponding survey, audit, QML, and QPL data for EEE parts. Few modifications will be needed to adapt the data model of the MePIMS function to the minor differences in structure between the NADCAP QML and the NASA survey data and the military QPL/QML data.

The functionality would be similar to the present MePIMS functions, giving the user the capability to select information on current survey activities by center or manufacturer, to select qualified or approved sources by part type or part number, and to select qualification or approval status of sources by source name, part type, or part number.

Justification:

a. gives parts engineers immediate access to NASA and military qualified sources data. This information is essential to the parts engineer's job of recommending parts which have qualified sources and specifying which sources are allowable for procurements.

b. enables the coordination of NASA manufacturer survey activities across projects, avoiding duplication of effort in this area - thus saving NASA money. There is currently no coordination of these activities and much duplication exists.

c. would provide the QPL/QML references for standard and approved parts, thereby adding substantial value to the EPIMS on- line versions of MIL-STD-975, preferred parts lists, and project- approved parts lists.

5.1.3.15(a) The system shall provide a repository (storage area) for Qualified Manufacturer Lists (QML), Qualified Products Lists (QPL), and Manufacturer Surveys. This repository shall support, as a minimum, the following data elements: CAGE data for sources (see CAGE data elements), Test Methods, Audit Status, Qualification Status, Company Notes, Initial Accreditation Date, Latest Accreditation Date, and Accreditation Expiration Date. The repository shall support additional data elements (to be defined) as necessary to accomodate QML/QPL data from activities external to NASA, such as the Defense Electronics Supply Center (DESC).

5.1.3.15(b) The system shall enable the user to select records from the QML/QPL and Manufacturer Survey repository by CAGE Code, Region, Qualification Status, or by any conjunctive (“AND”) combination of these search criteria.

5.1.3.15(c) The system shall enable the user to access the CAGE directory to look up a valid CAGE when making a query by CAGE on QML/QPL and Manufacturer Survey data.

5.1.3.15(d) The system shall enable the user to display the status of any QML/QPL or Manufacturer Survey record selected.

5.1.3.15(e) The system shall enable the user to display the contact personnel for any QML/QPL or Manufacturer Survey record selected.

5.1.3.15(f) The system shall enable the user to display the specifications, test methods, and applicable personnel for any QML/QPL or Manufacturer Survey record selected.

5.1.3.15(g) The system shall enable the user to display company notes for any QML/QPL or Manufacturer Survey record selected.

5.1.3.15(h) The system shall enable the Global Data Administrator (GDA) to add records to the QML/QPL and Manufacturer Survey repository.

5.1.3.15(i) The system shall enable the Global Data Administrator (GDA) to modify records in the QML/QPL and Manufacturer Survey repository. The system shall enable the GDA to select records for modification by the selection methods described in requirement [tbd].

5.1.3.15(j) The system shall enable the Global Data Administrator (GDA) to delete records from the QML/QPL and Manufacturer Survey repository. The system shall enable the GDA to select records for deletion by the selection methods described in requirement [tbd].

5.1.3.16 User Comments and Change Requests

Candidate requirements have not yet been defined in this area.

5.1.3.17 Parts Test and Analysis Data

Parts Test and Analysis Data Repository

5.1.3.17(a) The system shall provide a repository (storage area) for Failure Analysis, Destructive Physical Analysis, Construction Analysis, Parts and Components Evaluations, Test and Inspection Data

Concept: This capability would support all types of test and field failure history for EEE parts. NASA generates a great deal of test and analysis data — Failure Analysis (FA) Reports, Destructive Physical Analysis (DPA) Reports, Incoming Test and Inspection Data, Qualification Data, and Evaluation Data — which could be directly entered into the EPIMS database with this capability. This function would also enable NASA to exchange data with other agencies that have field reliability programs (such as the Air Force's Field Reliability Assessment Program — FRAP), thereby accumulating a significant quantity of data with which to characterize part reliabilities.

Test and field data in the EPIMS function prototyped during 1992-3 is selectable by part number, part type, report number, date, and manufacturer name. A full text search of the database can also be done to locate all reports which contain a given string of characters. The prototype function has full support for images.

The proposed development task is to modify the existing FA function to enable support for general test data, to refine the existing input functionality so that it could be used by personnel at any NASA center for the input of test results, FA's, DPA's, etc., and to test and integrate the final function.

Justification:

a. access to all NASA data generated in these areas in a form that can be automatically cross-referenced to parts lists in EPIMS would be valuable to project parts engineers, who must continually search through paper files and reports for this information. This capability would make much more of this data available to all NASA parts engineers than is available currently, thus adding to the quality of their support, and would make the information available on-line, which will save time.

b. the accumulation of a comprehensive database of test and field failure data, including data from all of NASA and from other agencies, enables NASA parts engineers to leverage the experience of the military/aerospace community as a whole in assessing part reliabilities.

Screening Test Data

The system shall support screening test data.

Receiving Test and Inspection Data

The system shall support Receiving Test and Inspection Data, such as Procurement Verification Test (PVT) data or acceptance test data.

Test Requirements Information

The system shall support data related to standards, specifications, and methods for part-level testing.

5.1.3.18 Parts Radiation Test Data

Access to JPL's RADATA System

5.1.3.18(a) The system shall enable the user to query, display, and run reports on data gathered from radiation testing of parts. This data is administered for NASA by JPL, and will be captured by EPIMS from JPL's RADATA radiation database.

c. enable the user to query, display, and run reports on testing currently being done or planned to be done by NASA activities, and to nominate parts for testing.

d. enable the user to graphically plot or statistically analyze radiation data.

5.1.3.19 Parts Library

Part Selection

5.1.3.19(a) The system shall support selection of parts by their attributes and parameters.

Part Specifications and Drawings

5.1.3.19(b) The system shall support applicable part-level specifications and drawings — in particular

a. NASA-controlled specifications and drawings, such as the Space Station Freedom SSP specifications, specifications controlled by NASA centers, and NASA-controlled limited coordination Military Specifications, such as the MIL-STD-975.

b. Specifications and drawings (which are deliverables) produced under NASA contract

c. Military specifications and drawings

Access to Vendor Data (Electronic Data Books)

5.1.3.19(c) The system shall provide access to part selection information from COTS products (e.g., CAPS, IHS) and vendors' electronic data books (e.g., the AMP connector library and others). Several semiconductor vendors (the "Pinnacles Group") are currently working together on developing an electronic data book standard, which will make this data readily available via network in the near future.

Access to Libraries Via the Internet

5.1.3.19(d) The system shall provide access to libraries available via the Internet, e.g. the current ARPA-funded project at DESC which is developing a VHDL library which will be made available to U.S. activities.

5.1.3.20 Data Capture, Upload, and Download

Data upload and download functions are functions that enable users to load data from their local (client) workstation into the EPIMS database (upload) and to capture data from an EPIMS query result into a file or report on their local workstation (download). The generic definitions of upload and download functional requirements included here would need to be made specific to the types of data to be handled, or else defined fully as a generalized capability usable for any type of data in EPIMS, before this candidate requirement is included in the EPIMS baseline requirements.

Data Upload Validation

5.1.3.20(a) All upload functions shall enforce any data validation rules applicable to the data elements being loaded.

Data Upload and Download Interactive Mode

5.1.3.20(b) all upload and download functions shall be operable interactively by the user so that the data being loaded can be checked and verified during the load process.

Ordering of Data Elements (Fields)

5.1.3.20(c) All upload functions shall enable interactive parsing and ordering of data elements to be loaded — i.e., the ordering of data elements in the file will be immaterial, as long as it is consistent.

Upload/Download ASCII Text Files

5.1.3.20(d) The system shall provide a function enabling an authorized user to:

- transfer data from ASCII text files into the appropriate database tables
- transfer data from database tables into ASCII text files.

Upload/Download Image Data

5.1.3.20(e) The system shall provide a function enabling an authorized user to:

- transfer data from image files into the appropriate database tables
- transfer data from database tables into image files.

Upload/Download Data from Computer-Aided (CA*)[1] Applications

5.1.3.20(f) The system shall provide a function enabling an authorized user to:

- transfer data from CA* applications into the appropriate database tables
- transfer data from database tables into CA* applications.
- access EPIMS Parts Library data from CA* applications.

Space Station Freedom Data Exchange Function

5.1.3.20(g) The system shall maintain an interface to the Space Station Freedom (SSF) engineering data system so that data can be exchanged.

MAPTIS Data Import Function

5.1.3.20(h) The system shall enable a user to import data from MAPTIS into EPIMS.

---

1. "CA*" refers to the entire class of computer-aided technologies, including Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), Computer-Aided Engineering (CAE), etc.

5.1.3.21 Parts Procurement, Tracking, and Inventory

Parts Procurement, Tracking, and Inventory

5.1.3.21(a) The system shall provide functions enabling the user to store and track data supporting project milestones, schedules, and procurement activities. Specifically, functions shall be provided which enable:

- storage of procurement tracking data
- calculation of procurement and testing schedules
- data maintenance and queries on status and location of received parts
- data maintenance and queries on stocks, spares, and surplus, to enable coordination of parts and materials resources among the projects.

5.1.3.22 Parts Application Information

Part Derating Calculation System

5.1.3.22(a) The system shall provide the capability to calculate the derated parametric values to be used in the application of a part, per the MIL-STD-975 derating criteria.

Concept: The software for this function has been developed by Harry Shaw of Paramax in a separate task, and is available at no cost. The task here is adaptation of the code (written in Borland C for the PC environment) to the EPIMS environment, documentation, testing, and integration.

Justification: saves time for the parts engineer and the circuit designer by providing a quick, on-line capability for referencing derating criteria and for calculating derated parameter values for any part.

MIL-HDBK-978

5.1.3.22(b) The system shall provide on-line access to the NASA EEE Part Application Guide (MIL-HDBK-978) document. This function shall include the capability to do full text searches, display selected pages, and print selected pages.

5.1.3.23 Parts Reliability Data

Reliability Data Repository

5.1.3.23(a) The system shall provide a repository for EEE parts reliability data, such as life test results, field usage reports, and evaluation reports.

5.1.3.24 User Technical Interchange Forum

User Technical Interchange Forum - Concept

The concept of the User Technical Interchange Forum is for a capability for users of the system to have a pool of information into which each user will be able to create a note or document on a technical issue, question, or problem in a either a formal mode — as in submitting a white paper for consideration, or in an informal mode — as if writing on a "blackboard". This would facilitate early identification of common issues and would enable the NASA centers to develop a coordinated approach or solution to a problem when appropriate.

Problems identified informally at this level could later become problem reports, NASA Advisories, or GIDEP Alerts. Approaches to technical and parts management issues could eventually be elevated to become formal "Lessons Learned", and be added to the Lessons Learned Information System (LLIS).

The system shall provide a repository function which will enable users to

a. type textual data

b. load textual and image data

c. release data

d. update and maintain data owned by the user

regarding lessons learned by NASA personnel in the course of engineering activities. This function will serve as a "corporate engineering memory" for NASA users to access.

e. When lessons-learned data has been newly stored in the system, a title or label indicating the subject matter of the data shall be displayed in the "News" window on the Main Menu for a period of one month. At the end of the month, the item will remain visible and accessible as part of a Technical Document Archive, but will no longer be shown in the "News" window (since it will no longer be "news").

f. This function shall enable users to store (subject to authorization by the Local DBAA and Local DBA, taking into account resource constraints on storage space and processing performance) and access engineering reports, evaluations, etc., and shall provide the capability to (subject to authorization):

    1. enter textual data by typing into an input window

    2. load textual and image data from electronic format

    3. load textual and image data from hard copies by scanning and character recognition

5.2 Performance and Quality Engineering Candidate Requirements

Note: The items in this section are not baseline requirements, and are not to be implemented in EPIMS 1.0.

5.2.1 Performance Requirements

Performance requirements have not yet been established for EPIMS.

5.2.2 Quality Engineering Requirements

Quality engineering requirements are beyond the scope of the initial EPIMS requirements specification, which is concerned with baseline application software functionality. Since EPIMS will share host services with other applications administered by the Assurance Data Systems Office (ADSO) at Goddard Space Flight Center, it will be the beneficiary of the system administration practices supported by the ADSO. The candidate requirements specified below for quality engineering, all of which are currently supported by the ADSO, will be included in later versions of the EPIMS requirements.

5.2.2.1 Data Quality and Integrity

Note: The items in this section are not EPIMS baseline requirements; while some of the practices described below are standard ADSO practices, their testing and verification are not part of EPIMS 1.0 testing and verification, and the requirements are outside the scope of the present EPIMS baseline requirements specification.

Data Back-ups

5.2.2.1(a) The system shall provide administrative functions enabling daily back-ups of data onto media which can be stored off-line in a safe environment.

Data Archiving

5.2.2.1(b) The system shall provide administrative functions enabling off-line, secure storage of data which have been designated to be archived. In all cases, archiving decisions will be coordinated with the owner(s) and users of the data.

5.3 Safety Requirements

Safety requirements are beyond the scope of this requirements specification.

5.4 Security and Privacy Requirements

5.4.1 Application Level Security and Privacy Requirements

Application level security and privacy requirements are included in the baseline EPIMS functional requirements (see section 5.1).

5.4.2 System Level Security Requirements

System level security requirements are beyond the scope of this requirements specification, but are maintained by the Assurance Data Systems Office (ADSO) at Goddard Space Flight Center for all ADSO-supported applications, which include EPIMS.

5.5 Implementation Constraints

Implementation constraints for EPIMS have not been identified.

5.6 Site Adaptation

Site adaptation is beyond the scope of this requirements specification.

5.7 Design Goals

Overall design goals for the EPIMS system are to:

- Integrate NASA EEE parts management with system design activities
- Capture NASA project data and deliverables electronically
- Share parts and design data among all NASA projects
- Automate tasks for NASA EEE parts engineers and managers
- Build a NASA EEE parts engineering and design “corporate memory”.

6

Traceability to Parent Requirements

Note: All requirements in this section are parent requirements, not baseline EPIMS requirements, and are provided for information only. Some, but not all, parent requirements will be implemented in EPIMS 1.0. Only those requirements specified in Section 5 of this document are EPIMS baseline requirements, which will be implemented in EPIMS 1.0.

This section cites the relevant parent requirements in the documents Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for NASA Space Flight Programs, NHB 5300.4(1F), which shall be referred to as the "NHB," and the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification which shall be referred to as the "ESS."

A detailed cross-reference from the EPIMS requirements defined in this document to those cited in this section from the NHB and the ESS is provided in section 7, Partitioning for Phased Delivery, in the matrices of requirements that show which requirements are to be implemented in which phases.

6.1 NHB 5300.4(1F) Requirements

The Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for NASA Space Flight Programs, NHB 5300.4(1F) is the primary NASA policy document governing EEE parts management and control for space flight and mission-essential or critical ground support equipment.

6.1.1 General NHB Requirements and Information

The NHB 5300.4(1F) provides the context in which to describe all required parts management activities for NASA projects, and hence it provides the context for the EPIMS, which is intended to support those activities.

Some sections of the NHB 5300.4(1F) describe the more general requirements for a NASA parts program and the allocation of responsibilities. These sections contain the context for some of the Functional Areas of EPIMS, as described in Section 5 of this document. They are:

1F105 Data Submittal
1F205 Management Communication Data System

These two sections are closely related. They are the first and most general references within the NHB to state the policy for contractual delivery of information. This establishes information deliverables as assets to the project, which require specification and management. The EPIMS fulfills this requirement, providing management for NASA's EEE parts information assets.

Section 1F105 points to Appendix C of the NHB, wherein the "data requirements description[s] (DRD)" are specified. These are templates to be used in formulating contractual data requirements.

The related section 1F205 states the responsibility of the contractor to "maintain a data system capable of providing parts data and information to the NASA procuring activity." It specifies that the data shall be provided in electronic format, and shall include, "as a minimum, the data required in DRD's D-3a, the As-Designed Parts List; D-3b, the As-Built Parts List; and problem/failure reports." The obvious intent of specifying electronic data submittal here is to facilitate the use of an information management system, which EPIMS provides.

Section 1F205 further specifies that, "after approval by the procuring activity, [all data] shall be provided, in an electronic format, to the NASA Parts Project Office ...." The intent of this requirement is to enable the NASA Parts Project Office to manage and distribute the data to all NASA projects. EPIMS provides this capability automatically, since the NASA Parts Project Office is the Global Data Administrator for EPIMS and has cognizance of all data in the system. The implied requirement here for distribution of data to all NASA projects is one of the bases for the EPIMS requirement that any data released by its originating project immediately become accessible (read-only) to all NASA projects, and to all users of EPIMS.

The general requirements of these sections and the corresponding EPIMS requirement Functional Areas are:

information management

This is the general requirement for a EEE Parts Information Management System (EPIMS).

use of information specifications

- *Data Capture, Upload, and Download*

minimum information requirements

- *Parts Lists*

  Specifically, As-Designed Parts Lists (ADPL) and As-Built Parts Lists (ABPL).

- *Alerts/Advisories/Problem Reports*

  Specifically, Problem Reports.

- *Parts Test and Analysis Data*

  Specifically, Failure Reports (and associated Failure Analyses).

data submittal in electronic format

- *Data Capture, Upload, and Download*

1F201 Parts Control Board

This section of the NHB describes the function of a Parts Control Board (PCB) for program management and specifies policies related to the following general requirements:

maximize use of standard parts

Standard parts are specified by the NASA Standard Parts List (MIL-STD-975), Preferred Parts Lists (PPL), and Project Approved Parts Lists (PAPL). The following EPIMS Functional Areas support the coordination, availability, and use of these resources:

- *NASA Standard EEE Parts List (MIL-STD-975)*
- *Parts Selection Lists*
- *Parts List Comparison*

  The Parts List Comparison Functional Area specifies capabilities to enable the identification of standard, preferred, or project-approved parts on a parts list, and to aid in the identification of parts for which standard, preferred, or project-approved parts may potentially be substituted.

minimize different types and styles of parts

This parts management requirement is supported by the information sharing capabilities required in the Parts List and NSPAR Functional Areas, the review of part selections in the Parts List Review Functional Area, the identification of commonalities and variances in parts usage by means of the Parts List Comparison Functional Area, the selection of preferred parts in the Parts Library Functional Area, and the coordination of common buys and the sharing of existing stocks of procured parts among all projects by means of the Parts Procurement, Tracking, and Inventory Functional Area. In summary, the supporting EPIMS Functional Areas are:

- *Parts Lists*
- *Part List Review*
- *Non-Standard Part Approval Requests (NSPAR)*

- *Parts List Comparison*
- *Parts Library*
- *Parts Procurement, Tracking, and Inventory*

1F202 Off-the-Shelf Equipment and New Builds of Existing Designs

This section requires parts list review for "off-the-shelf equipment, ... new builds of existing designs, and ... Government Furnished Equipment (GFE). The procuring activity is responsible for providing GFE parts lists to the contractor." The EPIMS Functional Areas supporting these requirements are:

- *Alerts/Advisories/Problem Reports*
- *Parts Lists*
- *Part List Review*
- *Non-Standard Part Approval Requests (NSPAR)*
- *NASA Project and Spacecraft Directory*
- *Alert/Parts List Cross-Reference*
- *Parts List Comparison*

1F203 Coordinated Procurement

Conditions and policies for coordinated procurements are defined in this section. It specifies that a coordinated procurement "is warranted when more than one contractor (prime, associate, or subtier) uses identical parts and benefits can be achieved in program costs, schedules, or reliability." It specifically requires that the Parts Control Plan (PCP) "shall have provisions for participation in the Government Stocking Program for procurement of Joint Army Navy Class S (JANS) semiconductor devices, microcircuits, and other part types when available." The applicable EPIMS Functional Areas are:

- *Parts Lists*
- *Parts List Comparison*
- *Parts Procurement, Tracking, and Inventory*
- *Parts Test and Analysis Data*

  A specific requirement of the Parts Procurement, Tracking, and Inventory Functional Area is to provide a repository for the Class S Stocking Program inventory list, which can be captured from the Defense Electronics Supply Center (DESC) electronic bulletin board and uploaded into EPIMS. The Parts Test and Analysis Functional Area enables the capture of the Destructive Physical Analysis (DPA) data from the Class S Stocking Program, which is delivered to NASA as a technical monitor for the program, and which is valuable information for contractors making procurements through the program.

1F103 Glossary of Terms

The NHB 5300.4(1F) glossary items have been incorporated into the Glossary of this document (Section 9) for information.

6.1.2 Specific NHB Requirements

•

6.2 EPIMS System Specification (ESS) Requirements

The functional requirements defined in this version of the EPIMS requirements document are a superset of those defined in the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification (ESS), published in September 1988 by the NASA Parts Project Office (NPPO). The ESS was written by Mitre Corporation under contract to the NPPO.

User requirements identified during the EPIMS Phase 3 development cycle prototyping period have been incorporated as part of the EPIMS baseline requirements documented herein.

This section contains the ESS requirements. The ESS requirements are cross-referenced to the EPIMS baseline requirements in Appendix A.

EPIMS End-User Functional Requirements

-1- EPIMS shall produce the following Parts Lists, Performance, and Reference Reports:

- Project NSPAR Activity
- Test History
- Destructive Physical Analysis
- Failure Analysis Reports
- NASA Advisory Data
- NASA Parts Problems/Lessons Learned

-2- EPIMS shall be capable of searching all of the above reports for data elements contained on these reports and for any embedded character string within any of these data elements.

-3- EPIMS shall be capable of comparing alert notices with parts lists and displaying the results on a report or on-line terminal.

-4- Reference Data Functions. EPIMS shall be capable of adding, changing, deleting, reporting, and displaying the following data:

- Parts history

- Parts cross-reference

- Lessons learned

- Text change page (for the NSPL, MIL-HDBK-978, NPPO Newsletter, and other documents)

- Project directory

-5- EPIMS shall be capable of searching all of the above reports for data elements contained on these reports and for any embedded character string within any of these data elements.

-6- Performance/Test Data and Alerts Functions. EPIMS shall produce the following reports, and allow the option of printing or displaying them on user terminals:

- Radiation report

- Failure Analysis reports

- Test History reports

- Destructive Physical Analysis reports

- Electrostatic Discharge reports

-7- EPIMS shall provide the capability for users to define reports that summarize test results and parts history information.

-8- EPIMS shall be capable of searching all of the above reports for data elements contained on these reports and for any embedded character string within any of these data elements.

-9- Candidate Parts Data Functions. EPIMS shall be capable of adding, changing, deleting, reporting, and displaying candidate parts data, including the following:

- Displaying candidate standard parts from an existing project parts list

- Displaying a specific candidate part record

- Changing the values of data elements on a specific candidate part record

- Deleting a specific candidate part recommendation

-10- EPIMS shall be capable of searching candidate parts data for data elements defined for candidate parts and for any embedded character string within any of these data elements.

-11- NSPAR Data Functions. EPIMS shall be capable of adding, changing, deleting, reporting, and displaying NSPAR data, including the following:

- Entering new NSPARs
- Viewing an existing NSPAR
- Changing an existing NSPAR
- Deleting an existing NSPAR
- Sorting, indexing, and reporting on existing NSPARs

-12- EPIMS shall be capable of searching NSPAR data for data elements defined for NSPARs and for any embedded character string within any of these data elements.

-13- Parts List Data. EPIMS shall check parts list data when entered or changed for invalid or missing information, and identify each occurrence with an appropriate indicator or message.

-14- EPIMS shall maintain a flag that indicates whether or not the nonstandard part has been approved and whether any waivers or deviations have been issued. The originating EPIMS user, in performing parts lists maintenance, needs the ability to maintain the As Designed, As Built, Project Approved Parts Lists, and Center Preferred Parts Lists that he entered originally.

-15- Since the hardcopy for the preferred parts lists are highly formatted, publication ready material, only the preferred part numbers shall be stored in EPIMS database.

-16- The specific NPPO functions, that EPIMS shall provide are the following:

- Entering a new parts list
- Adding records to an existing parts list
- Viewing records on an existing parts list
- Changing records on an existing parts list
- Deleting records on an existing parts list
- Renaming an existing parts list
- Deleting an entire parts list

- Preparing parts lists reports

-17- To facilitate the location of specific records on parts lists, that may contain thousands of lines of entries, the EPIMS shall provide users with access to a parts list search function that supports the following functions:

- Scrolling through an entire parts list until the desired record is located

- Entering a part type code that results in the selection and display of one or more parts list records that match the part type code

- Entering a specific part number that results in the selection and display of a one or more records on the parts list

- Entering a generic part type code that results in the selection and display of one or more parts list records that match the generic part type code

- Entering a vendor code that results in the selection and display of one or more parts list records that match the vendor code

- Entering a project's subsystem code that results in the selection and display of one or more parts list records that match the subsystem code

-18- Data Validation. EPIMS shall perform automated edit and validation of each Project Parts List. Such edit and validating functions shall include the following:

- Checking for missing or incomplete data

- Editing to ensure that numeric fields contain numeric data and that alphabetic fields contain alphabetic data

-19- Data Organization. Any given Project Parts List will contain lists of parts provided by each contractor on the project. The identity of parts lists for contractors and subcontractors shall be maintained.

-20- At any time, however, EPIMS shall provide a user command that results in a consolidated list for the whole project. Each Project Parts List may contain several hundred to several thousand different parts.

-21- The EPIMS shall be able to maintain lists for up to 30 projects. Once a project is completed, the As Designed Parts List(s) for that project shall be archived off EPIMS onto magnetic tape.

-22- The As Built Parts List(s), however, shall be maintained on EPIMS for 5 years after completion of the project and then archived onto magnetic tape.

-23- Archived data shall be restorable to the on-line database within one working day.

-24- Data Ownership/Access. Responsibility for updating the Project Parts Lists shall remain with the Projects and their contractors.

-25- The EPIMS shall provide a capability for the Projects and their contractors to access and update a working version of their Project Parts Lists.

-26- The working parts lists that the Projects and contractors update shall also be accessible to the NPPO for review. If NPPO reviews determine that a significant change is necessary, the NPPO will notify the Project and contractor of required corrections before making the parts list available to all other EPIMS users on a read-only basis.

* -27- Interactive Access. The interactive interface that the system shall provide to the terminal user shall guide the novice user through the system by providing a dialogue that includes menus and informative error and help messages.

-28- All information transmitted to the terminal during an interactive session shall be displayed to the terminal and the terminal user shall be allowed to specify print options that cause the actual printing.

-29- The customized on-line queries that the system shall provide include searching the database based upon an input value for one (or a Boolean combination) of the following identifiers:

- Generic part number
- Part number
- Part type identification
- Equipment identification
- Procurement specification number
- Manufacturer's name
- Project identification
- Project system/subsystem identification
- Center or contractor identification

-30- Any one of these input values shall result in the system displaying (or printing) one or more of the above related data elements for the input value.

-31- Parts Lists Comparisons. Center/contractor users shall be able to compare their project parts lists to each other and to other parts lists for the purposes of validation and exception reporting.

-32- Specifically, the EPIMS user shall be able to direct the system to compare each line item on a project parts list to the parts found on any one of the following lists:

- NASA Standard Parts List (NSPL)
- Preferred Parts List
- Qualified Products List
- As Designed Parts List
- As Built Parts List
- Any other or all other released parts list(s) residing in EPIMS

NPPO Data Administration Functions

This section details the NPPO Data Administration functions, which includes add, change, and delete capabilities. Data will be entered through various media, including magnetic tapes, OCR, workstation diskettes, and on-line terminals. Data will be updated and deleted primarily through on-line terminals.

* -33- Reference Data Maintenance. EPIMS shall be capable of adding, changing, and deleting all types of Reference Data including the CAGE code list, NSPL text change pages, parts history reviews, parts cross-reference listings, lessons learned, the NASA project directory, audits and surveys.

-34- Performance/Test Data and Alerts Maintenance. EPIMS shall be capable of adding, changing, and deleting all types of Performance/Test and Alerts Data including GIDEP parts data, GIDEP Engineering Data Interchange and Failure Experience Data Interchange Data, Microcircuit Reliability Assessment Program (MRAP) and Semiconductor Reliability Assessment Program (SRAP) reports from RADC/RAC, Destructive Physical Analysis (DPA) reports, Electrostatic Discharge (ESD) reports, and Impact Alert/Warning/Notice data from the Naval Avionics Center.

-35- Parts List Maintenance. EPIMS shall be capable of adding, changing, and deleting all types of Parts List data, including:

- NSPL
- Qualified Products List (QPL)
- Candidate Parts List
- Class S Stocking Program Parts List

-36- EPIMS shall be capable of producing usage projection data for DESC.

-37- EPIMS shall be capable of storing, tracking, and providing access to multiple versions of QPLs, the Candidate Parts Lists, and nominations for candidate parts.

-38- Other Data Maintenance. EPIMS shall be capable of adding, changing, and deleting all types of Other Data, including:

- Safety, Reliability, and Quality Assurance (SRQA) bulletin board data

- NASA advisory data

- NPPO Newsletter abstract

-39- General Data Administration. EPIMS shall provide the following general data administration functions:

- Controlling of versions of databases and promoting from working database to production database (i.e., moving users' approved working files to the central database for public viewing)

- Performing data integrity audits and data analysis functions to ensure integrity of the database and to detect the loss or degradation of data

- Validating all new data to be added to the database

-40- File Conversion. EPIMS shall convert all data being entered in a machine-readable format so that data are in the correct format and coding scheme for loading to the EPIMS database.

-41- Backup and Recovery. EPIMS shall have the capability to backup and restore any EPIMS files and databases, either incrementally or in total.

-42- EPIMS shall be able to recover all files and transactions made prior to system failure.

-43- EPIMS shall provide the following journaling capabilities:

- Creation of a before image file that contains images of data before changes are made to it. This file will be used for rollback recovery in the event of hardware or system failure.

- Creation of an after-image file that records transactions that have been committed for database update that can be used for rollforward recovery in the event of media failure.

- Creation of a "journaling" file that records all transactions made by the user. This journaling file is applied to a backup copy of the database to produce an exact copy of the lost database, in case of system failure (rollforward recovery).

- Creation of a journal sequence number written into the header of each journaling file to guarantee that journal files are applied in the same order in which they are written.

-44- EPIMS shall provide data consistency checking that ensures that for every transaction all of its operations are completed.

-45- EPIMS shall provide locks that control concurrence, or the accessing of the same data, by many users to ensure that data are not updated or changed improperly or out of sequence.

-46- During data validation processing, EPIMS shall allow the following alternative courses of action:

- Acceptance: Those input or update transactions that meet all validation criteria are accepted into the database.

- Rejection: Those transactions that fail to satisfy one or more major (pre-defined) validation criteria are rejected outright.

- Partial Acceptance: Failure of a transaction to satisfy all validation criteria may be insufficient to warrant complete rejection. In these instances, the data are stored with a flag and a report must be generated to advise users of the errors.

7

Partitioning for Phased Delivery

7.1 Rationale for Phasing

Phased delivery is a method appropriate to the development of large systems, such as EPIMS, that have many requirements which fall into natural groupings. In the case of EPIMS, a phasing plan is essential to enable the incremental development of several key aspects of the system:

1. modeling and development of database functions to support complex data types, such as image, free text, project and configuration management data, and CAD data
2. training and coordination of system, network, and data administrative activities at the NASA Centers
3. links, gateways, and file transfer procedures with existing systems, both internal and external to NASA
4. establishment of reliable external data sources and procedures for download and transfer of reference data
5. full identification of all data-intensive EEE parts activities and requirements of the NASA engineering and quality assurance communities at all NASA Centers.

It can be observed that many, if not all, of these tasks involve coordination with or support for constantly evolving entities or activities. Therefore it is important to reexamine the phasing plan as each phase is completed, and to keep the system as flexible and adaptable as possible.

7.2 Recursively Phased Life Cycle Plan

The recursively phased life cycle is one that is frequently used in the development of institutional information systems which are expected to form a continuing and well-defined portion of an enterprise-wide information environment.

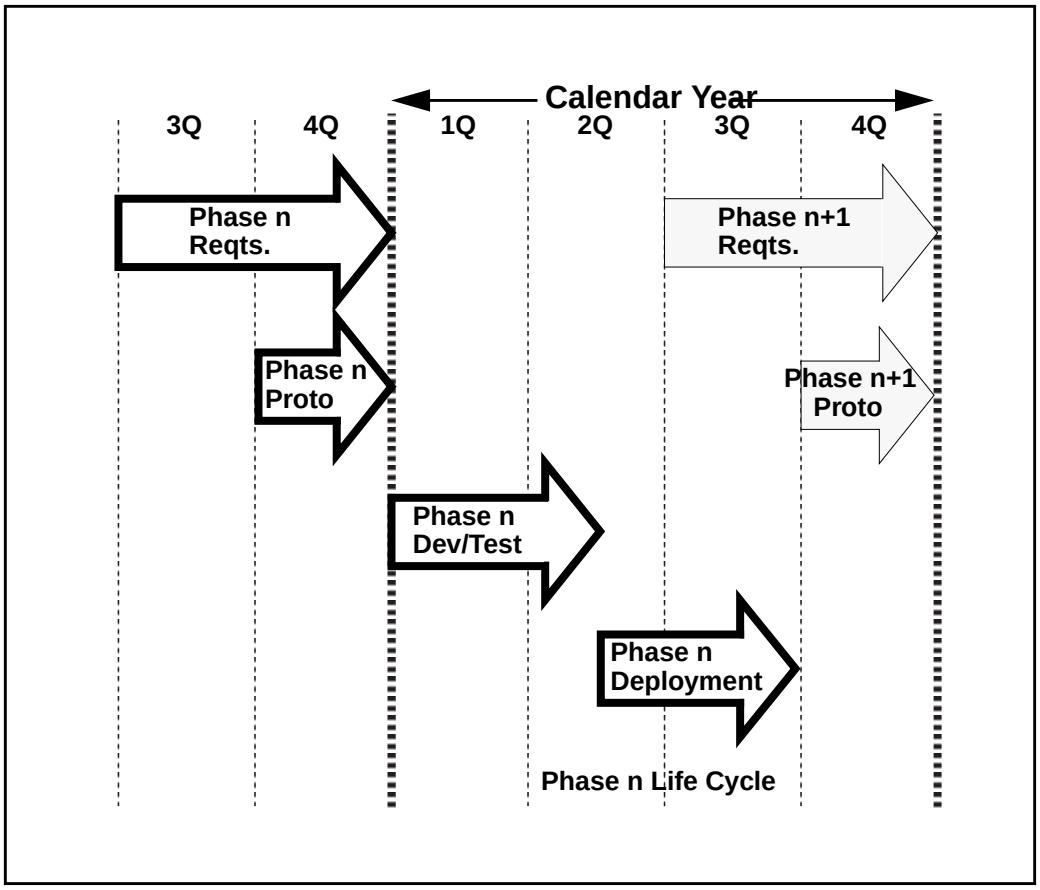


Figure 8: EPIMS Recursively Phased Life Cycle

Figure 1 illustrates the recursively phased approach of the EPIMS life cycle concept. Continuous development is important for continuous improvement of the system, as well as for adaptation and tuning of the system for interaction with other information resources in the engineering environment. The standards activities described above are evolutionary, as are vendor's implementation of those standards in the off-the-shelf applications that will be necessary components of an integrated engineering information environment. This evolution of standards and software throughout the engineering information world requires continuous adaptation and tuning of in-house integrated informations systems such as EPIMS.

7.3 Development Priorities

User priorities for the various functional areas of EPIMS have determined the order in which the functionalities for those areas have been implemented.

In each of the EPIMS development and prototyping phases, a survey of users to determine development priorities has been done.

The most recent such survey was done at a meeting of the NASA Parts Steering Committee at the Jet Propulsion Laboratory (JPL) in Pasadena, CA, on January 12, 1993.

The following priority ratings of the various areas of functionality were gathered from that survey:

Table 5: User Priorities for EPIMS Functional and User Support Areas

Area	ARC	GSFC	HQ	JPL	JSC	KSC	LaRC	LeRC	MSFC	NPPO	SSFPO	Total	Avg.
GIDEP Data	H	H	H	H	M	H	H	H	H	H	M	9-2-0	2.82
Data & System Administration	H	H	H	H	H	M	H	H	H	H	L	9-1-1	2.73
Training	H	M	H	H	H	H	H	H	H	M	M	8-3-0	2.73
MIL-STD-975	H	M	H	H	M	H	M	H	M	H	H	7-4-0	2.64
NASA Advisories	H	M	H	H	M	M	H	H	H	H	M	7-4-0	2.64
Project Parts Lists	M	H	H	M	H	M	H	H	H	M	H	7-4-0	2.64
Derating Criteria	M	M	M	H	H	H	M	M	H	H	M	5-6-0	2.45
Manufacturer Surveys/ Audits	H	M	H	L	H	M	M	H	M	H	H	6-4-1	2.45
Radiation Data	L	H	H	L	H	L	H	H	H	H	H	8-0-3	2.45
Part Selection Library	M	M	M	M	H	M	H	M	H	M	L	3-7-1	2.18
Parts Selection Lists	M	H	M	L	M	M	M	M	M	H	H	3-7-1	2.18
NASA In-House Parts Inventory	M	H	H	M	L	M	H	H	L	M	L	4-4-3	2.09
NSPARs	M	M	M	L	H	M	M	M	H	L	H	3-6-2	2.09
Part Specifications	M	L	M	H	H	H	L	H	L	H	L	5-2-4	2.09
Reliability Data	H	M	M	M	L	H	M	M	M	M	L	2-7-2	2.00
MIL-HDBK-978	M	M	H	L	M	M	M	M	L	H	L	2-6-3	1.91
FA's, DPA's, & Evaluations	L	M	M	L	M	M	M	M	H	L	L	1-6-4	1.73
Technical Documents	L	M	M	M	M	M	M	M	L	L	M	0-8-3	1.73
Technical News	L	L	M	L	M	M	M	M	L	M	M	0-7-4	1.64

7.4 Detailed Phase Definition Matrices

This section contains the requirements matrices that define in detail which requirements are being implemented in which EPIMS development phases. These requirements matrices also contain detailed cross-references to the applicable parent requirements from the Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for NASA Space Flight Programs, NHB 5300.4(1F), which shall be referred to as the "NHB," the NASA Electrical, Electronic, and Electromechanical (EEE) Parts Information System (EPIMS) System Specification which shall be referred to as the "ESS," and other sources of requirements as applicable.

At present, this section contains only the Phase Definition Matrix for the EPIMS Phase 1 Baseline, which will be implemented in EPIMS 1.0.

7.4.1 EPIMS Phase 1 Baseline Definition Matrix

Table 6: EPIMS Phase 1 Baseline Definition Matrix, which follows, contains all EPIMS Phase 1 requirements, ordered by Requirement ID number. Each requirement is cross-referenced to the paragraph and page on which it appears in the detailed requirements sections of the document. References to parent requirements in the NHB and the ESS, as applicable, are listed in the two rightmost columns of the table.

Table 6: EPIMS Phase 1 Baseline Definition Matrix

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[1] The system shall provide an on-line Help function that can be selected by the user from any element (screen or window) of the user interface.	5.1.2.1(a)	[27]	[none]
[2] Help documentation shall provide specific support for each window of the application.	5.1.2.1(b)	[27]	[none]
[3] The Help function shall provide access to all on-line Help topics from any user interface element (menu or window) by providing a “pick list” of topics from which a sepcific topic can be selected by title.			
[4] The Help function shall be “context-sensitive” in the following sense: the Help topic presented to the user when Help is called shall pertain to the function and user interface element from which it is called.	5.1.2.1(d)	[27]	[none]
[5] The system shall display Help topics in a scrollable text window.			
[6] The Help function shall enable the user to search for a user-specified text (string of characters) within a Help topic.	5.1.2.1(f)	[27]	[none]
[7] The Help function shall enable the user to save the text of any selected Help topic to a file.	5.1.2.1(g)	[27]	[none]
[8] The Help function shall enable the user to print the text of any selected Help topic.	5.1.2.1(h)	[27]	[none]
[9] The system shall provide a populated database of all Federal Supply Classes (FSC) applicable to EEE parts, of which each logical record shall include, as a minimum, the FSC name and the FSC code.	5.1.2.2(a)	Data Element Definition only	[none]

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[10] The system shall enable the user to search for FSC's by FSC name, FSC number (also known as FSC code), or FSC category (e.g., mechanical or EEE — a pick list of categories shall be provided). The system shall enable the user to select all FSC records containing any conjunctive ("and") combination of the above selection criteria. The system shall enable the user to clear all search criteria in preparation for a new search.	5.1.2.2(b)	Data Element Definition only	[none]
[11] The system shall display the set of FSC records resulting from a user query as a list in tabular format. The query result list shall contain columns for FSC number, FSC name, and FSC category. The record count (number of FSC records selected) shall be displayed with the query result list.			
[12] The system shall enable the user to generate a report from the results of an FSC query. The system shall enable the user to view the report on the screen, send it to a system file, or print it.	5.1.2.2(d)	Data Element Definition only	[none]
[13] The system shall provide a look-up capability for the FSC directory that can be called from other functions for which that capability is required (the requirement for access to the FSC look-up will be specified in the requirements for those functions needing it).			
[14] The FSC look-up capability shall enable the user to select (query) FSC records by FSC number, FSC name, and FSC category (e.g., mechanical or EEE — a pick list of categories shall be provided), and shall enable the use of "wildcards" (specification of a substring of the data to be selected) in the FSC name and FSC number. The FSC look-up capability shall enable the user to select all FSC records containing any conjunctive ("and") combination of the above selection criteria. It shall enable the user to clear all search criteria in preparation for a new search.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[15] The FSC look-up capability shall display the set of FSC records resulting from a user query as a list in tabular format. The query result list shall contain columns for FSC number, FSC name, and FSC category. The record count (number of FSC records selected) shall be displayed with the query result list.			
[16] The FSC look-up capability shall enable the user to insert a selected FSC from the look-up into the field in the interface element (screen or window) of the function from which the FSC look-up was called.			
[17] The system shall provide a populated database of all active Commercial And Government Entity (CAGE) codes, which shall include the CAGE code, CAGE Name, CAGE Manufacturer Code, street address, city, state, ZIP code, phone number, Former CAGE Code, Former CAGE Code Information, Government Code, SIC Code, Status Code, and Manufacturer Code. The CAGE directory data shall be updated quarterly by the Global Data Administrator (GDA) to maintain concurrence with the parent data set (the H4/H8 standard).	5.1.2.3(a)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b
[18] The system shall be capable of storing the standard abbreviation for the state in which a CAGE is located, so that this can be extracted from the Defense Logistics Agency (DLA) CAGE data and stored as a separate field to support selection of CAGE's by state or region.	5.1.2.3(b)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[19] The system shall enable the user to select (query) CAGE records by CAGE code, name, address, city, or state. The query interface shall support the use of wildcards in any of these selection criteria. The system shall enable the user to select all CAGE records containing a given text string in any text field (all those specified above except state). The system shall enable the user to select all CAGE records containing any conjunctive ("and") combination of the above selection criteria. The system shall enable the user to search all fields for a text string. The system shall enable the user to clear all search criteria in preparation for a new search.	5.1.2.3(c)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b
[20] The system shall display the set of CAGE records resulting from a user query as a list in tabular format. The query result list shall contain columns for CAGE Code, CAGE Name, CAGE Manufacturer Code, and Former CAGE Code. The record count (number of CAGE records selected) shall be displayed with the query result list.			
[21] The system shall enable the user to display detailed information for any CAGE record selected from the query result list (see requirement [20]). The detailed information shall include all information specified in requirement [17] for the selected CAGE.	5.1.2.3(e)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b
[22] The system shall enable the user to generate a report from the results of a CAGE query. The system shall enable the user to view the report on the screen, send it to a system file, or print it.	5.1.2.3(f)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[23] The system shall enable the Global Data Administrator (GDA) to add a new CAGE record to the database.	5.1.2.3(g)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b
[24] The system shall enable the Global Data Administrator (GDA) to modify any data field in an existing CAGE record in the database. The system shall enable the GDA to select CAGE records for modification by the selection methods described in requirement [19].	5.1.2.3(h)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b
[25] The system shall enable the Global Data Administrator (GDA) to delete any CAGE record from the database. The system shall enable the GDA to select CAGE records for deletion by the selection methods described in requirement [19].	5.1.2.3(i)	[33]	1F304-1a(6), 1F304-1b(4), DRD D-2, DRD D-3a, DRD D-3b
[26] The system shall provide a CAGE look-up capability for accessing the CAGE directory that can be called from other functions for which that capability is required (the requirement for access to CAGE look-up capability will be specified in the requirements for those functions needing it).			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[27] The CAGE look-up capability shall enable the user to select (query) CAGE records by CAGE Code, and name. The query interface shall support the use of wildcards in any of these selection criteria. The CAGE Code look-up shall enable the user to select all CAGE records containing any conjunctive ("and") combination of the above selection criteria. The CAGE Code look-up shall enable the user to restrict the selection to NASA center CAGE's only. It shall enable the user to clear all search criteria in preparation for a new search.			
[28] The CAGE look-up capability shall display the set of CAGE records resulting from a user query as a list in tabular format. The query result list shall contain columns for CAGE Code, and CAGE Name. The record count (number of CAGE records selected) shall be displayed with the query result list.			
[29] The CAGE look-up capability shall enable the user to display detailed information for any CAGE record selected from the query result list (see requirement [28]). The detailed information shall include the data elements specified in requirement [17] for the selected CAGE.			
[30] The CAGE look-up capability shall enable the user to insert a selected CAGE Code from the look-up into the field in the interface element (screen or window) of the function from which the CAGE Code look-up was called.			
[31] The system shall provide a User Directory repository (storage area) for information about users, which will support, as a minimum: name, User ID, CAGE code of the user's location, associated NASA center, mail code, organization code, phone, FAX, building and room, NASA projects for which the user has authorized access, and any particular roles of the user in EPIMS.	5.1.2.4(a)	[none]	[none]

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[32] The system shall enable any user to query the User Directory for system users by User ID, first name, last name, location (location CAGE code), NASA center (NASA center CAGE code), or NASA project (UPN). The query interface shall support the use of wildcards in the specification of User ID, first name, last name, location (location CAGE code), NASA center (NASA center CAGE code). The system shall enable the user to select all records containing any conjunctive ("and") combination of the above selection criteria. The system shall enable the user to clear all search criteria in preparation for a new search.	5.1.2.4(b)	[none]	[none]
[33] The User Directory query interface shall provide access to the CAGE look-up capability (see requirements [26] through [30]) to enable selection of a valid CAGE for the location (location CAGE code) and NASA center (NASA center CAGE code) query criteria.			
[34] The User Directory query interface shall provide access to the Project Directory look-up capability (see requirements [48] through [51]).			
[35] The system shall display the set of User Directory records resulting from a user query as a list in tabular format. The query result list shall contain columns for User ID, name, and location name. The record count (number of User Directory records selected) shall be displayed with the query result list.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[36] The User Directory shall enable the user to display detailed information for any User Directory record selected from the query result list (see requirement [35]). The detailed information shall include User ID, first name, middle initial, last name, location CAGE code, center CAGE code, mail code, organization code, phone number, FAX number, building, room, and a list of all applicable user roles and data access roles, including the user role code number and description with applicable UPN and project name code (for project-dependent roles) and CAGE code (for organization-dependent roles). The system shall enable the user to display the list of applicable user roles and data access roles sorted either by project or by CAGE code. The User Directory detailed information shall also provide access to detailed CAGE information (see requirement [21]) on the location CAGE code and center CAGE code.			
[37] The system shall enable the Global Data Administrator (GDA) and the Local System Administrator (LSA) to add records to the User Directory. The system shall enable the GDA and LSA to create a new record by copying and modifying an existing record.	5.1.2.4(g)	[none]	[none]
[38] The system shall enable the Global Data Administrator (GDA) and the Local System Administrator (LSA) to modify records in the User Directory. The system shall enable the GDA and LSA to select records for modification from the User Directory by the selection methods described in requirement [32].	5.1.2.4(h)	[none]	[none]
[39] The system shall enable the Global Data Administrator (GDA) and the Local System Administrator (LSA) to delete records from the User Directory. The system shall enable the GDA and LSA to select records for deletion from the User Directory by the selection methods described in requirement [32].	5.1.2.4(i)	[none]	[none]
[40] The system shall support the User Types specified in Table 1: User Types, which begins on page 50 of this document.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[41] The system shall support the Data Access Roles specified in Table 2: Data Access Roles, which begins on page 51 of this document.			
[42] The system shall provide a NASA Project Directory repository (storage area) for information about NASA projects, which shall support, as a minimum, the following attributes: project name, project name code, Unique Project Number (UPN), NASA center name, NASA center acronym, NASA center CAGE code, spacecraft name, and spacecraft name code..			
[43] The system shall enable the user to select (query) NASA project information from the NASA Project Directory by Unique Project Number (UPN), project name, project name code, or NASA center (a pick list of NASA centers shall be provided). The query interface shall support the use of wildcards in the specification of the Unique Project Number (UPN), project name, and project name code. The system shall enable the user to select all records containing any conjunctive (“and”) combination of the above selection criteria.			
[44] The system shall display the set of NASA Project Directory records resulting from a user query as a list in tabular format. The query result list shall contain columns for UPN, project name code, project name, and NASA center acronym. The record count (number of records selected) shall be displayed with the query result list.			
[45] The system shall enable the Global Data Administrator (GDA) to add records to the NASA Project Directory.			
[46] The system shall enable the Global Data Administrator (GDA) to modify records in the NASA Project Directory. The system shall enable the GDA to select records for modification from the NASA Project Directory by the selection methods described in requirement [43].			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[47] The system shall enable the Global Data Administrator (GDA) to delete records from the NASA Project Directory. The system shall enable the GDA to select records for deletion from the NASA Project Directory by the selection methods described in requirement [43].			
[48] The system shall provide a Project look-up capability for the NASA Project Directory that can be called from other functions for which that capability is required (the requirement for access to the Project look-up capability will be specified in the requirements for those functions needing it).			
[49] The Project look-up capability shall enable the user to select (query) project directory records by Unique Project Number (UPN), project name code, project name, and NASA center administering the project. The look-up query interface shall support the use of wildcards in the specification of the UPN, project name, and project name code. A pick list of NASA centers shall be provided. The Project look-up capability shall enable the user to select all records containing any conjunctive ("and") combination of the above selection criteria. The Project look-up capability shall enable the user to clear all search criteria in preparation for a new search.			
[50] The Project look-up capability shall display the set of NASA Project Directory records resulting from a user query as a list in tabular format. The query result list shall contain columns for UPN, project name code, project name, and NASA center acronym. The record count (number of CAGE records selected) shall be displayed with the query result list.			
[51] The Project look-up capability shall enable the user to insert a selected Project Name Code and/or UPN from the look-up into the field in the interface element (screen or window) of the function from which the Project look-up was called.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[52] The system shall provide a repository for NASA design elements (spacecraft, systems, subsystems, etc.), the NASA Spacecraft and Design Elements Directory, which shall initially support administrative information and the assembly hierarchy of the design elements. The repository shall support the following attributes for design elements (see Appendix A for definitions and more information): Project Name Code/ UPN, Spacecraft or Element Number, Name, Name Code, Serial Number, Drawing Number, and Criticality Code.			
[53] The NASA Spacecraft and Design Elements Directory shall implement data access controls for design element information below the spacecraft level. The data access controls shall provide data access based upon the Data Access Roles specified by requirement [41]. The Global Data Administrators (GDA), Local System Administrators (LSA), all Project Data Administrators (PDA), and all Project Users shall have read access to design elements below the spacecraft level for any project. Other users to whom the GDA or PDA has given Read data access for a specific project shall have read access to design elements below the spacecraft level for that project. NASA design element information below the spacecraft level shall not have a “release” function by which general access can be granted, but read access to the data for a specific project can be granted to specific users by the GDA or PDA, by assigning the Read data access role to that user for that project. The purpose of this requirement is to preserve the confidentiality of sensitive or proprietary design data.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[54] The NASA Spacecraft and Design Elements Directory shall enable the user with appropriate data access privileges to query the directory by UPN (access to the Project Look-up function specified in requirements [48] through [51] shall be provided), Spacecraft/Element Number, Name, Name Code, Serial Number, Drawing Number, Criticality Code, or by any conjunctive ("and") combination of these attributes. The query interface shall support the use of wildcards in the query specification of Spacecraft or Element Name, Name Code, Serial Number, or Drawing Number. The NASA Spacecraft and Design Element query capability shall enable the user to clear all search criteria in preparation for a new search.			
[55] The system shall display the set of Spacecraft and Design Elements resulting from a user query as a scrollable list in tabular format. The query result list shall contain columns for Project Name Code, Spacecraft or Element Number, Name Code, Element Level, and Element Name.			
[56] The system shall enable the Project Data Administrator (PDA) to add records for that project to the NASA Spacecraft and Design Elements Directory.			
[57] The system shall enable the Project Data Administrator (PDA) to modify a record selected from that project's records in the NASA Spacecraft and Design Elements Directory. The system shall enable the PDA to select records for modification by the selection methods described in requirement [43].			
[58] The system shall enable the Project Data Administrator (PDA) to delete a selected record from that project's records in the NASA Spacecraft and Design Elements Directory. The system shall enable the PDA to select records for deletion by the selection methods described in requirement [43].			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[59] The system shall provide a NASA Spacecraft and Design Element look-up capability that will provide access to the NASA Spacecraft and Design Elements Directory from other functions for which that capability is required (the requirement for access to the NASA Spacecraft and Design Element look-up capability will be specified in the requirements for those functions needing it).			
[60] The NASA Spacecraft and Design Element look-up capability shall enable the user to select NASA Spacecraft and Design Elements Directory records for a particular Project Name Code from a nested pick list of spacecraft design elements.			
[61] The NASA Spacecraft and Design Element look-up capability shall display the element selected within a hierarchy showing each of its parent elements up to the spacecraft level.			
[62] The NASA Spacecraft and Design Element look-up capability shall enable the user to execute a query based upon the selected NASA Spacecraft or Design Element.			
[63] The system shall provide a consolidated repository (storage area) for field failure and problem data on EEE parts, which will initially include Government-Industry Data Exchange Program (GIDEP) Failure Experience Data Interchange (FEDI) reports (of which the highest priority are Alerts and Safe-Alerts) and NASA Advisories.	5.1.2.6(h)		
[64] The system shall provide a repository (storage area) for GIDEP FEDI data, to include GIDEP Alerts, Safe-Alerts, Problem Advisories, Diminishing Manufacturing Sources, Product Change Notices, and Agency Action Notices. This repository shall support, as a minimum, the following data elements: the Alert Number, Issue Date, Title/ Description, Summary (the abstract as it appears on the GIDEP Electronic Bulletin Board), and information on each item referenced by the FEDI data record, including the FSC number, manufacturer's CAGE code, part number, and lot date code(s).			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[65] The system shall enable the Global Data Administrator (GDA) to add records to the GIDEP FEDI repository.	5.1.2.6(j)		
[66] The system shall enable the Global Data Administrator (GDA) to modify records in the GIDEP FEDI repository. The system shall enable the GDA to select records for modification from the GIDEP FEDI repository by the selection methods described in requirement [72].	5.1.2.6(k)		
[67] The system shall enable the Global Data Administrator (GDA) to delete records from the GIDEP FEDI repository. The system shall enable the GDA to select records for deletion from the GIDEP FEDI repository by the selection methods described in requirement [72].	5.1.2.7(e)		
[68] The system shall provide a repository (storage area) for NASA Advisories. This repository shall support, as a minimum, the following data elements: the Advisory Number, Issue Date, Title/Description, full text of the Advisory, and information on each item referenced by the Advisory, including the FSC number, manufacturer's CAGE code, part number, and lot date code(s)	5.1.2.7(f)		
[69] The system shall enable the Global Data Administrator (GDA) to add NASA Advisories.	5.1.2.7(g)		
[70] The system shall enable the Global Data Administrator (GDA) to modify NASA Advisories. The system shall enable the GDA to select NASA Advisories for modification by the selection methods described in requirement [72].	5.1.2.7(h)		
[71] The system shall enable the Global Data Administrator (GDA) to delete NASA Advisories. The system shall enable the GDA to select NASA Advisories for deletion by the selection methods described in requirement [72].	5.1.2.7(i)		

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[72] The system shall enable the user to select GIDEP FEDI and NASA Advisory records by Alert Number, part number, FSC number, or CAGE code, also enabling the use of "wildcards" in Alert Number or part number; or by FEDI record type ("Alert Code" — e.g., Alerts, Safe-Alerts, etc. — types as specified in requirement [64], or NASA Advisories); or by Issue Date as before, after, or equal to a given date or between two specified dates. The system shall enable the user to select records by any conjunctive ("and") combination of these search criteria. The system shall enable the user to clear all search criteria in preparation to a new search.	5.1.2.7(j)		
[73] The system shall enable the user to access the FSC look-up capability (see requirements [13] through [16]) to look up a valid FSC when making a query by FSC on GIDEP or NASA Advisory data.	5.1.2.7(k)		
[74] The system shall enable the user to access the CAGE look-up capability (see requirements [26] through [30]) to look up a valid CAGE when making a query by CAGE on GIDEP or NASA Advisory data.	5.1.2.7(l)		
[75] The system shall display the set of GIDEP FEDI and NASA Advisory records resulting from a user query as a list in tabular format. The query result list shall contain columns for Alert number, Alert code, Title/Description, FSC number, CAGE Code, and Alert Issue Date. The record count (number of records selected) shall be displayed with the query result list.			
[76] The system shall enable the user to display all of the data specified in requirements [64] (for GIDEP FEDI records) or [68] (for NASA Advisories) for any record selected from the query result list (see requirement [75]).			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[77] The system shall enable the user to generate a report from the results of an Alert/Advisory query. The system shall enable the user to view the report on the screen, send it to a system file, or print it.	5.1.2.7(o)		
[78] The system shall provide a repository (storage area) that will support: 1) project parts lists of spacecraft or ground system design elements; 2) part selection lists; and 3) stock and inventory lists. The system shall be capable of storing and differentiating between Early Potential Parts Lists (EPPL), As-Designed Parts Lists (ADPL), As-Built Parts Lists (ABPL), Project-Approved Parts Lists (PAPL), Preferred Parts Lists (PPL), Institutional Parts Lists (IPL), Stocking Lists, and Inventory Lists. This repository shall support, as a minimum, the following attributes (see Appendix A for definitions and other information) for the design element as a whole: the project, spacecraft, all higher assemblies containing the design element, version, type (e.g., Working, Early Potential, As-Designed, As-Built), date (created), and contact person. For each part on a parts list, the following attributes shall be supported (see Appendix A for definitions): Federal Supply Class (FSC), specification number, specification part number, generic part number, manufacturer part number, manufacturer CAGE code, description, screening specification number, failure rate level, NASA NSPAR number, National Stock Number (NSN), lot date code, serial number, and reference location.			
[79] The system shall implement data access controls for parts lists. The data access controls shall provide data access in accordance with the Data Access Roles specified by requirement [41].			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[80] The system shall enable the user to select and display a parts list to which the user has access permission (as determined by the user's Data Access Roles and the release status of the project, spacecraft, or design element) by project, spacecraft, or any design element for which that information has been entered into EPIMS, or by any conjunctive ("and") combination of these attributes. If the parts list specified by the user has more than one version, the query capability shall enable the user to specify a version, or to select "all released versions."			
[81] The parts list query interface shall provide the user with the option to query against all types of parts lists (EPPL, ADPL, ABPL, PAPL, PPL, etc.) or against any one type, or by any conjunctive ("and") combination of parts list type with the attributes specified in requirement [80].			
[82] The parts list query interface shall provide the following options for specifying the parts lists from which to select parts: all projects or a specified project. If the user elects to specify a project, the parts list query interface shall provide access to the project look-up capability (see requirements [48] through [51]).			
[83] If the user specifies a project (see requirement [82]) as a condition for a query on parts lists, the parts list query interface shall provide the user the option to access the NASA Spacecraft and Design Elements look-up capability (see requirements [59] through [62]) to select a valid spacecraft or design element for incorporation into the query. Note that access to elements lower than the spacecraft level is restricted by requirement [53].			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[84] The parts list query interface shall enable the user to select parts by specification part number, generic part number, CAGE code, Federal Supply Class (FSC), or by any conjunctive ("and") combination of these attributes. The query interface shall support the use of wildcards in the query specification of specification part number and generic part number.			
[85] The system shall display as a list in tabular format the set of parts resulting from a user query on parts lists. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a parts list query: the project name code, the spacecraft name code, the specification part number, the generic part number, manufacturer, and the Federal Supply Class (FSC) number. The record count (number of records selected) shall be displayed with the query result list.			
[86] The system shall enable the user to display "detailed information" for any part selected from the query result list (see requirement [85]) for which this data exists in EPIMS, which shall include all attributes of a part listed in requirement [78].			
[87] The detailed information display capability for parts (see requirement [86]) shall enable the user to display the information from the CAGE directory (see requirement [21]) on the manufacturer (CAGE) for the selected part.			
[88] The detailed information display capability for parts (see requirement [86]) shall enable the user to display detailed information on the design element, to which the part is attached, and its position in the hierarchy of spacecraft, systems, and other design elements on which it is located, including the EPIMS version, date, and contact point for each system or design element on the spacecraft.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[89] The system shall enable a user with the appropriate data access role to enter parts list information on an existing parts list working copy, to create a new parts list working copy, or to create a version from an existing parts list (see the discussion of "version" in this context on page 159). Access to this capability is restricted to the Project Data Administrator (PDA) and Project Users for that project to whom the PDA has given the "Initiate" role.			
[90] The parts list working copy creation capability shall first present a user interface (window or screen) into which all required parts list information can be entered. Required parts list information shall include Unique Project Number (UPN), Spacecraft, Element Level 1, Parts List Type (EPPL, ADPL, ABPL, etc.), Parts List Date, and Contact Userid.			
[91] If the user has "Initiate" access for more than one project, the parts list information input interface shall provide a pick list of the projects for which the user has that access role.			
[92] The parts list information input interface shall provide a pick list of all spacecraft for which information exists in EPIMS for a project selected from the project pick list (see requirement [91]).			
[93] The parts list information input interface shall enable the user to enter information for a new spacecraft for a project selected from the project pick list (see requirement [82]). To enter this information, the system shall enable the user to access the NASA Spacecraft and Design Elements Directory maintenance function.			
[94] The parts list information input interface shall provide a pick list of valid parts list types (EPPL, ADPL, ABPL, PAPL, PPL, etc.).			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[95] The parts list information input interface shall provide a pick list of existing parts list versions in EPIMS for the project, spacecraft, and parts list type selected by the user, and shall enable the user to designate a version to be copied to create a new working copy.			
[96] The parts list information input interface shall enable a Project Data Administrator for a project or a user with the "Initiate" role for that project to create a new working copy of a selected parts list type for a specified design element defined for that project from a selected working copy or version of a (possibly different) parts list type for a (possibly different) design element defined for that project. The system shall support a single working copy of each parts list type (e.g., EPPL, ADPL, ABPL, etc.) for each design element defined for a project. The parts list information input interface shall provide as default information for the new parts list working copy: the current date as the working copy date and the user's userid as the contact userid. The system shall enable the user to edit this default information.			
[97] The parts list information input interface shall enable a Project Data Administrator for a project or a user with the "Initiate" role for that project to create a new parts list version of a selected parts list type for a specified design element defined for that project from a working copy of a (possibly different) selected parts list type for that design element. The parts list information input interface shall provide as default information for the new parts list version: the current date as the version date and the user's userid as the contact userid. The system shall enable the user to edit this default information.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[98] The parts list information input interface shall enable the user to enter the following part information: specification part number, generic part number, manufacturer part number, National Stock Number (NSN), specification number, Federal Supply Class (FSC), part description, standard part flag, manufacturer CAGE code, lot date code, and comments. The system shall enable the user to access the FSC look-up capability to select a valid FSC.			
[99] The parts list information input interface shall enable the user to enter information on the design element to which a part is directly attached. The parts list information input interface shall provide pick lists of all systems and design elements for which information exists in EPIMS on the selected spacecraft, and shall enable the user to select any design element from these pick lists.			
[100] The parts list information input interface shall enable the user to enter information for a new system or design element for the project and spacecraft selected. To enter this information, the system shall enable the user to access the NASA Spacecraft and Design Elements Directory maintenance function.			
[101] The parts list information input interface shall enable the user to enter the part quantity (defined as the number of parts with the same part number and attribute data attached to a particular spacecraft design element) for EPPL or ADPL. The system shall support serial number and/or reference location information if it is available, but shall enforce data integrity by allowing the user to enter *either* part quantity *or* (serial number and/or reference location), *but not both* — in the latter case, part quantity shall be forced to “1”.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[102] The system shall enable users with appropriate access roles to modify a parts list line item on a working copy (versioned copies are frozen). This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the "Initiate" role. The parts list modification capability shall enable the user to select a parts list line item for modification by any of the query and information display capabilities specified in requirements [80] through [88].			
[103] The system shall enable users with appropriate access roles to delete a parts list line item on a working copy (versioned copies are frozen). This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The parts list line item deletion capability shall enable the user to select a parts list line item for deletion by any of the query and information display capabilities specified in requirements [80] through [88].			
[104] The system shall enable users with appropriate access roles to release a parts list. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Release role. The parts list release capability shall display a list of all parts lists for which the user has one of the roles specified above, giving release access. The list shall contain the project (or UPN), Spacecraft, Element (i.e., the element to which the parts are attached), Parts List Type, and Version for each of the parts lists in the displayed list.			
[105] The system shall enable users to generate the following reports on any parts list data that has been selected: a summary report in tabular format, with columns for project, spacecraft, specification part number, generic part number, FSC number, and CAGE code; a detailed report in line-by-line format, containing all supported data elements (see requirement [78]); and a custom report in line-by-line format, for which the user may specify the contents by picking from a list of all supported data elements.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[106] The system shall provide a repository (storage area) for Non-Standard Part Approval Requests (NSPARs), which shall support, as a minimum, the following attributes: NASA NSPAR Number, NASA NSPAR Number version, contractor NSPAR number, specification part number, generic part number, manufacturer part number, release flag, resubmittal flag, preparation date, NSPAR type (in-house or contractor), contractor CAGE code, subcontractor CAGE code, manufacturer CAGE code, Federal Supply Class (FSC) code, National Stock Number (NSN), specification number, screening specification number, closest standard part number, part description, grade level, selection submittal date, specification submittal date, qualification plan submittal date, qualification test submittal date, NSPAR submittal date, part application comments, part life obsolescence comments, justification for use (text), basis for qualification (text), radiation comments, contact name, reviewer name, selection status code, specification status code and response date, qualification plan status code, qualification test response date, quality assurance status code, quality assurance response date, project status code, project response date, release date, and review comments.			
[107] The system shall implement data access controls for NSPARs. The data access controls shall provide data access in accordance with the Data Access Roles specified by requirement [41].			
[108] The system shall enable the user to select and display a set of NSPARs pertaining to a particular NASA project to which the user has access (as permitted by the user's Data Access Roles and the release status of the NSPARs) by project, NASA NSPAR number or version letter, FSC, manufacturer CAGE code, specification part number, generic part number, or by any conjunctive ("and") combination of these attributes. The query interface shall support the use of wildcards in the query specification of NASA NSPAR number, specification part number, and generic part number.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[109] The NSPAR query interface shall provide the option of selecting NSPARs for a specified project or (by not specifying a project) for all projects. If the user elects to specify a project, the NSPAR query interface shall provide access to the project look-up capability (see requirements [48] through [51]).			
[110] In formulating a query for NSPAR data, if the user specifies a project for which they have access to unreleased data (see Table 1: User Types, beginning on page 50, and Table 2: Data Access Roles, beginning on page 51), the NSPAR query interface shall provide the option of selecting "all versions," "released versions," "latest released versions," or "working versions." If the user specifies a project for which they do not have access to unreleased data, or if the project is left unspecified (implying *all* projects), the NSPAR query interface shall provide the option of selecting "all released versions" or "latest released versions" (i.e., only released NSPARs can be selected unless the user specifically has access to unreleased project data).			
[111] The system shall display as a list in tabular format the set of NSPARs resulting from a user query. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a NSPAR query: the NASA NSPAR number and version letter, the project, the specification part number, the generic part number, the manufacturer CAGE code, and the Federal Supply Class (FSC) number. The record count (number of records selected) shall be displayed with the query result list.			
[112] The system shall enable the user to display, for any NSPAR selected from the query result list (see requirement [111]), all attributes listed in requirement [108].			
[113] The detailed information display capability for NSPARs (see requirement [112]) shall enable the user to display the information contained in the CAGE directory (see requirement [21]) on the manufacturer (CAGE) for the selected part.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[114] The system shall enable a user with the appropriate data access roles (see next sentence) to add or modify a NSPAR for a specified project. Access to this capability is restricted to the Global Data Administrator (GDA), Project Data Administrator (PDA), and Project Users for that project to whom the PDA has given the "Initiate" role (see Table 1: User Types, beginning on page 50, and Table 2: Data Access Roles, beginning on page 51).			
[115] The NSPAR input (add or modify) interface shall require a NASA NSPAR Number, project (UPN), part number (any one of specification part number, generic part number, manufacturer part number, or National Stock Number), Federal Supply Class (FSC) number, CAGE code, NSPAR type (in-house or contractor), NASA contact userid, and preparation date to be entered before the new NSPAR record can be saved (committed as a working copy).			
[116] The NSPAR input (add or modify) interface shall enable the user to enter the following NSPAR information (optional except as specified in requirement [115]): NASA NSPAR number and version, specification part number, generic part number, manufacturer part number, National Stock Number (NSN), specification number, screening specification number, part description, closest standard part number, manufacturer CAGE code, grade level; submittal and response dates and status codes for the four-step NSPAR procedure (selection, specification, qualification plan, and qualification test) and for the project and quality assurance activities; comments submitted with the NSPAR relative to part application, part life obsolescence, justification for use, basis for qualification, and radiation hardness; and the official NASA review comments on the NSPAR.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[117] The NSPAR input (add or modify) interface shall provide a pick list of the projects for which the user has the appropriate access role to create a NSPAR (i.e., projects for which the user either is the Project Data Administrator [PDA] or has been assigned the "Initiate" role by the PDA).			
[118] The NSPAR input (add or modify) interface shall provide a pick list of valid NSPAR types (in-house or contractor).			
[119] The NSPAR input (add or modify) interface shall provide access to the FSC look-up capability to select a valid FSC (see requirements [13] through [16]).			
[120] The NSPAR input (add or modify) interface shall enable a Project Data Administrator or a user with the Initiate role for a project to create a new NSPAR for the project by entering the required and optional data specified in requirements [115] and [116].			
[121] The NSPAR input (add or modify) interface shall enable a Project Data Administrator or a user with the Initiate role for a project to create a new NSPAR for the project by changing the NASA NSPAR Number of a working copy (unreleased) of a NSPAR (i.e., if the NASA NSPAR Number is changed, the data shall be added as a new NSPAR, and the working copy from which it was created shall remain unmodified with its original NASA NSPAR Number).			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[122] The system shall enable users with appropriate access roles to modify a working copy of a NSPAR. (Released/versioned NSPAR's are to be frozen, but able to be copied into a new working copy, which can then be modified as necessary and released as a new version of that NSPAR or, by changing the NASA NSPAR Number, as a new NSPAR.) The modify capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The NSPAR modification capability shall enable the user to select a NSPAR working copy for modification by any of the query and information display capabilities specified in requirements [108] through [111].			
[123] The system shall enable users with appropriate access roles to delete a NSPAR. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The NSPAR deletion capability shall enable the user to select a NSPAR for deletion by any of the query and information display capabilities specified in requirements [108] through [111].			
[124] The system shall enable users with appropriate access roles to release a NSPAR. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Release role. The NSPAR release capability shall display a list of all NSPARs for which the user has one of the roles specified above, giving release access. The NSPAR release capability shall provide the release history for any NSPAR selected from the displayed list.			
[125] The NSPAR release interface shall detect whether the NSPAR number and version combination assigned to a NSPAR to be released already exists within EPIMS; if so, the system shall display a warning to the user and shall not allow the record to be committed until the NSPAR number and version are changed to a combination unique within EPIMS.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[126] The system shall enable users with appropriate access roles to resubmit a NSPAR by creating a working copy from an existing version, modifying the NSPAR, assigning a new version letter, and releasing the new version. This capability shall be accessible only to the Project Data Administrator (PDA) and to Project Users to whom the PDA has given the Initiate role. The NSPAR resubmit capability shall enable the user to select a NSPAR for resubmittal by any of the query and information display capabilities specified in requirements [108] through [111].			
[127] The system shall enable users to generate the following reports on any NSPAR data that has been selected: a summary report in tabular format, with columns for NASA NSPAR Number, Version, Status, UPN, Specification Part Number, FSC number, and CAGE code; a detailed report in line-by-line format, containing all supported data elements (see requirement [106]); and a custom report in line-by-line format, for which the user may specify the contents by picking from a list of all supported data elements.			
[128] The system shall provide a repository (storage area) for the NASA Standard Parts List (NSPL), which shall be capable of storing for each part on the NSPL the Federal Supply Class (FSC), specification number, specification part number, generic part number, special part number (to enable better search and compare capability), grade level, part description, and version reference.			
[129] The system shall allow read-only access to NSPL data for all EPIMS users.			
[130] The system shall enable the user to select and display a particular NSPL version, or to select all released versions. A pick-list of NSPL versions available in EPIMS shall be provided.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[131] The NSPL query interface shall enable the user to select standard parts by specification number, specification part number, generic part number, part grade level (1, 2, or 1 & 2), Federal Supply Class (FSC), by text search on any of these fields, or by any conjunctive ("and") combination of these attributes. The query interface shall support the use of wildcards except for the FSC number, for which wildcards are supported in the look-up subfunction.			
[132] The system shall enable the user to access the FSC look-up capability (see requirements [13] through [16]) to look up a valid FSC when making a query by FSC on the NSPL.			
[133] The system shall display as a list in tabular format the set of parts resulting from a user query on the NSPL. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a query: the specification number, the specification part number, the generic part number, the part grade level, and the Federal Supply Class (FSC) number. The record count (number of records selected) shall be displayed with the query result list.			
[134] The system shall enable the user to display, for any part selected from the query result list (see requirement [133]), the following attributes: the specification part number, the generic part number, the FSC number and name, the specification number, the part grade level, and the part description. This will be called the "detailed information."			
[135] The system shall enable users to generate the following reports on any NSPL data that has been selected: a summary report in tabular format, with columns for Specification Part Number, Generic Part Number, and FSC Number; a detailed report in line-by-line format, containing all supported data elements (see requirement [128]); and a custom report in line-by-line format, for which the user may specify the contents by picking from a list of all supported data elements.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[136] The system shall provide a repository (storage area) for Alert Impact Cross-Reference data, which shall be capable of storing for each matched part the part ID (unique identifier within the parts list), the Unique Project Number (UPN), the Federal Supply Class (FSC) code, the Commercial And Government Entity (CAGE) code for the vendor, the matched part number, the type of part number that was matched (e.g., specification part number, generic part number, manufacturer part number, or National Stock Number), the type of part record that matched (e.g., project parts list, part selection list, NSPAR, or NSPL), and the corresponding data elements for the Alert part: the Alert part FSC code, the Alert part CAGE code, the Alert part number, and the special Alert part number substring (used for matching) in the case of a match on it. The repository shall also store the numeric relative priority of each match (numeric priorities are specified in requirement [138]).			
[137] The system shall populate the Alert Impact Cross-Reference repository with the results of running a cross-referencing algorithm that compares the records of the Alerts/Advisories/Problem Reports repository with all parts list items, NSPAR's, and NASA Standard Parts List (NSPL) records stored in EPIMS. This cross-reference data shall be updated nightly with cross-references to any new Alerts/Advisories/Problem Reports repository, parts list items, NSPARs, or NSPL records. The cross-referencing algorithm shall implement the formal definition of a match or "hit" between an Alert (any GIDEP Failure Experience Data Interchange [FEDI] record, NASA Advisory, or other problem report stored in the EPIMS Alert/Advisory/Problem Report repository) and a part on a parts list as shown in Figure 5: Formal Specification of Alert Impact Cross-Reference Match Condition, on page 72.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[138] For each Alert and parts list line item pair, the Alert Impact Cross-Reference repository shall contain at most one record of a match or "hit" — this is both for clarity and for economy of storage, since it is quite likely that when a pair matches on one set of part numbers, they will also match on other aliases (e.g., generic part numbers). This requirement specifies the order of priority for the several possible match conditions. The priorities are specified in Table 3: Alert/Part Match Prioritization, on page 73.			
[139] The system shall automatically run the Alert Impact Cross-Reference algorithm against any bulk-loaded parts lists or NSPARs and against any parts list, NSPL, or NSPAR record additions. The system shall automatically adjust cross-reference data as necessary when parts list or NSPAR records are modified or deleted, so that new data is cross-referenced and data that has been removed by changes or deletions is no longer cross-referenced.			
[140] The system shall automatically run the Alert Impact Cross-Reference algorithm against any bulk-loaded Alerts, Advisories, or Problem Reports and against any Alert, Advisory, or Problem Report record additions. The system shall automatically adjust cross-reference data as necessary when Alerts, Advisories, or Problem Reports are modified or deleted, so that new data is cross-referenced and the cross-reference data that has been removed by changes or deletions (which shall be referred to as "superseded") is maintained separately, but is accessible (for traceability purposes) by specifically selecting the "superseded" data, by the same query methods as the good data.			
[141] The system shall present a warning to the Project Data Administrator (PDA) for any project that owns a parts list for which there are hits in the Alert Impact Cross Reference repository that have not received dispositions (see requirement [149]). This warning shall be an on-line message that appears when the PDA logs on to EPIMS.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[142] The system shall enable the user to select Alert Impact Cross Reference records by Alert Number, part number, FSC number, CAGE code, project, or spacecraft design element, also enabling the use of "wildcards" in any of these selection criteria (except FSC number and CAGE code, for which wildcards are supported in the look-up subfunction); or by "Alert Code" — e.g., Alert, Safe-Alert, and other types as specified in requirement [64], NASA Advisories, and Problem Reports; or by Issue Date as before, after, or equal to a given date or between two specified dates. The system shall enable the user to select records by any conjunctive ("and") combination of the search parameters listed above. The system shall enable the user to clear all search criteria in preparation for entering a new query. The Alert Impact Cross Reference query interface shall restrict user access by project as follows: the user can specify in a query (1) all projects to which the user has read access to unreleased data, or (2) a specified project to which the user has read access to unreleased data. I.e., the system shall give the user access to Alert Impact Cross-Reference data only for projects to which the user has been granted explicit read access to unreleased project data. The user will not have access to Alert Impact Cross-Reference data for projects to which the user does not have read access, *even for released parts lists and NSPARs of those projects*. The purpose of this restriction is to protect the sensitivity of GIDEP data and the project's dispositioning of Alert Impacts.			
[143] If the user elects to specify a project (subject to the restrictions of requirement [142]), the Alert Impact Cross-Reference query interface shall provide access to the project look-up capability (see requirements [48] through [51]).			
[144] The Alert Impact Cross Reference query interface shall enable the user to access the FSC look-up capability to select a valid FSC (see requirements [13] through [16]).			
[145] The Alert Impact Cross Reference query interface shall enable the user to access the NASA Spacecraft and Design Elements look-up capability (see requirements [59] through [51]) to select a valid spacecraft or design element for incorporation into a query.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[146] The system shall display as a list in tabular format the set of records resulting from a user query on the Alert Impact Cross Reference. This query result list shall contain, as a minimum, the following data elements (columns) when presenting the results of a query: the Alert Number, the Alert part number, the matched record type (parts list, NSPAR, or NSPL), the project, the Federal Supply Class (FSC) number, and the entity's matched part number. The record count (number of records selected) shall be displayed with the query result list.			
[147] The Alert Impact Cross Reference query interface shall provide the capability to display detailed information on the Alert, Advisory, or Problem Report for a selected record in the query results. Access will be given to all detailed data, as specified in requirement [64]. This access should provide the same functionality as the Alert, Advisory, or Problem Report function itself, except that it will give access only to the record selected in the Alert Impact Cross Reference query results display window.			
[148] The Alert Impact Cross Reference query interface shall provide the capability to display detailed information on the matched part for a record selected inside the query results display. If the selected part is a part from a project parts list, the detailed information shall include all attributes specified in requirement [86]. If the selected part is from a NSPAR, the detailed information shall include all attributes specified and referenced in requirement [112]. If the selected part is from the NASA Standard Parts List, the detailed information shall include all attributes specified in requirement [134].			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[149] The Alert Impact Cross Reference function shall provide the capability to attach a disposition to one or more Alert Impact Cross Reference records. A disposition shall be accessible only to project users or other users who have been given access to unreleased project data. A disposition shall consist of a comment (text) and a disposition code or "synopsis". The system shall provide the capability to display the disposition for any selected Alert Impact Cross Reference record. The system shall enable the user with access to project data to create a report on any single selected disposition.			
[150] The system shall provide the capability for the Project Data Administrator (PDA) to "release" Alert Impact Dispositions to the NASA Center GIDEP Alert Coordinator. Note that this "release" will provide access *only* to the NASA Center Alert Coordinator — the dispositions will never be released outside of the NASA project (but can be made accessible to users outside the project by the PDA specifically granting to particular users read access to project data).			
[151] The system shall enable users to generate the following reports on any Alert Impact Cross-Reference data that has been selected: a summary report in line-by-line format, containing for each matched item selected: for the matched Alert, the Alert Number, Match Code, Alert Part Number, FSC Number, and CAGE Code; for the matched item, parts list information (if applicable, including the UPN, project name code, spacecraft name code, lowest element name code, parts list type, and parts list version) and part information (including the functional area [parts list, NSPAR, or NSPL], part number, part number type [generic, specification, manufacturer, etc.], FSC number, and CAGE code).			

/export/home/waterbug/epims/docs/isreq/isr_epims1.0/7.4.1isr_epims

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[152] The system shall enable the user to select for comparison any two parts lists from among the released or unreleased parts lists to which the user has access in EPIMS. The system shall offer the option of selecting a specific version of the NASA Standard Parts List (NSPL) from among the versions available in EPIMS. The system shall enable the user to select a project parts list by project, spacecraft, parts list type (Early Potential, As-Designed, As-Built), and parts list version. The system shall enable the user to select a project-approved parts list by project and version. The system shall then compare the Federal Supply Classes (FSC) of the parts in the parts lists selected, identify the common FSC's, and enable the user to select all or any subset of the common FSC's to include in the parts list comparison.			
[153] The Parts List Comparison function shall compare project parts lists and project-approved parts lists according to the logic shown in Figure 6: Project Parts List and Project-Approved Parts List Comparison Match Condition, on page 78.			
[154] The Parts List Comparison function shall compare project parts lists and project-approved parts lists to the NASA Standard Parts List (NSPL) according to the logic shown in Figure 6: Project Parts List and Project-Approved Parts List Comparison Match Condition, on page 78.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[155] The Parts List Comparison function shall display the results of the parts list comparison in two tabular formats: one for the display of matched parts and one for the display of unmatched parts. The matched parts shall be displayed with the following columns combined into a single table: for parts list #1 — part id (unique id number of the part in parts list #1, to enable identification of separate records with the same part number), part number, part number type (generic, specification, manufacturer, or National Stock Number [NSN]), CAGE code, and Federal Supply Class (FSC); for the corresponding matched parts in parts list #2 — exactly the same columns, with the exception of FSC, which is required by the matching logic to be identical to that of the part from parts list #1. In addition, the parts list types and total record counts for parts lists 1 & 2 shall be displayed, along with the total number of matched parts.			
[156] The Parts List Comparison function shall display the unmatched parts from either parts list in the following columns: part id, generic part number, specification part number, manufacturer part number, CAGE code, and FSC code. The system shall enable the user to toggle between display of unmatched parts from either parts list.			
[157] The Parts List Comparison function shall provide the option to display detailed information on any record selected from the tabular display. For parts lists, the detailed information will be identical to that required for parts lists (see requirement [86]). For the NSPL and project-approved parts lists, the detailed information will be identical to that required for the NSPL (see requirement [134]).			
[158] The Parts List Comparison function shall provide the capability to generate a report with the same information as is displayed on the screen as the result of a parts list comparison (see requirements [156] and [157]).			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[159] The Parts List Comparison function shall return to the parts list selection window after the results window is closed, and shall provide the option to select a different FSC or set of FSC's on which to compare the selected parts lists, or even to replace one or both of the currently selected parts lists with new selections.			
[160] The system shall provide access to a "Technical Archive" consisting of technical articles, papers, reports, and publications, and will support identification of the articles by title and parent publication in a scrollable pick list.			
[161] The Technical Archives function shall display any technical document selected from the scrollable pick list in a scrollable text window.			
[162] The Technical Archives function shall enable the user to retrieve all technical documents containing a user-specified text (string of characters). When the user displays a document selected from the result table of a string search, the first occurrence of the string shall be highlighted.			
[163] The Technical Archives function string-search (see requirement [162]) shall be capable of recursive searches — i.e., the function shall be capable of searching the solution set of a previous search for another character string, and displaying the new solution set. The Technical Archives function shall present any sub-selected list of technical documents in a scrollable pick list.			
[164] The Technical Archives function shall enable the user to retrieve all technical documents before, after, or on a given date or between two specified dates, and shall enable the user to restrict the selected documents to those of a specified parent publication, and shall provide a pick list of the parent publications available.			
[165] The Technical Archives function shall enable the user to save the text of any selected document to a file.			

Table 6: EPIMS Phase 1 Baseline Definition Matrix (Continued)

[Requirement ID Number] Requirement	**Paragraph in This Document**	**References in EPIMS System Specification**	**References in NHB 5300.4(1F)**
[166] The Technical Archives function shall enable the user to print the text of any selected document.			

8

Notes

8.1 Parts List Versions in EPIMS

The concept of versioning as specified in these requirements *refers only to the control and tracking of parts lists captured from external sources, and not to the configuration management of the engineering design items themselves* — in general, the EPIMS parts list versions may or may not correspond to the versions assigned within the design process to the design items whose designations and configurations are managed there. Thus, when the EPIMS requirements refer to "creating", "modifying", etc., a parts list version, this refers only to the loading of the parts list version into EPIMS and assignment of a version number to distinguish between successive instances of the same type of parts list for a given design item (version). Any observed correspondence between these EPIMS parts list version numbers and the version numbers of the related design items is coincidental (although the goal is obviously to coordinate EPIMS as closely as possible with the engineering process, and to maintain the correct correspondence between parts list versions and their associated design item versions).

8.2 EPIMS Integration with the NASA Design Environment

The engineering design configuration control system is separate from EPIMS and beyond the scope of EPIMS. However, some form of integration with or interface to the engineering design environment would be useful both to EPIMS and to the project management process in general. The requirements for this have not yet been fully defined.

The approach recommended for the integration EPIMS with the NASA project design environment is "repository integration." Repository integration avoids the problem of creating and maintaining the n^2 translation applications necessary to interface n different application environments. It is implemented by the creation of a comprehensive design repository, into which each application tool in the project life cycle will save its information and have access to the information created and maintained by all other tools.

This approach entails the utilization of a comprehensive information model that supports all project life cycle information.